U.S. ENERGY POLICY

COMMITTEE ON RESOURCES
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

SECOND SESSION

ON

DOMESTIC ENERGY POLICY AS IT RELATES TO THE DEVELOPMENT OF OIL AND GAS PRODUCTION IN THE UNITED STATES AND HOW WE CAN BECOMF LESS DEPENDENT ON FOREIGN IMPORTS

FEBRUARY 2, 1996—HOUSTON, TX

Serial No. 104–55

Printed for the use of the Committee on Resources

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U.S. Energy Policy, Serial No. 104-... HEARING

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U.S. ENERGY POLICY

FRIDAY, FEBRUARY 2, 1996

HOUSE OF REPRESENTATIVES,
COMMITTEE ON RESOURCES,
Houston, TX.

The Committee met, pursuant to call, at 1:11 p.m., in Ballroom C, George R. Brown Convention Center, Houston, Texas, Hon. Ken Calvert (Chairman of the Subcommittee on Energy and Mineral Resources) presiding.

STATEMENT OF HON. KEN CALVERT, A U.S. REPRESENTATIVE FROM CALIFORNIA, AND CHAIRMAN, SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

Mr. CALVERT. The Committee on Resources will come to order.

The Committee is meeting today to hear testimony on U.S. energy policy and in Chairman Young's absence, I have been asked to chair the hearing. Thank you for those who braved the ice and cold weather to come out, unusually inhospitable weather here for Houston, I suspect. But thank you for coming and listening to our hearing today.

Twenty-five or so years ago Astronaut Jim Lovell of the Apollo XIII mission said the fateful words, "Houston, we have a problem". Ladies and gentlemen, while the Apollo crew made it home safely, I believe our nation continues to have a problem sustaining a domestic energy supply, particularly with respect to crude oil production. The Committee on Resources comes to the oil capitol of the world today to listen to you who live and work in the oil patch in order to gain an understanding about why so much investment in the industry has taken flight elsewhere, whether or not that trend is hurting our security and standard of living, and what the several states here represented are doing at their level of government regarding this problem.

The 104th Congress is now entering its second session. Members on both sides of the aisle will acknowledge that the majority view on issue after issue has been "what are the states doing and how are they doing it better than the feds?" That is the so-called revolution at work in Congress today. I believe, as do many others, that the states often have a better perspective on resolving problems than does the Federal Government. There are lessons to be learned from our friends in Texas, Louisiana, Oklahoma and New Mexico—in and outside of government—about stemming job loss from the oil patch or creating new opportunities both on and offshore and the Committee wants to hear them.

I want to say at the outset of today's hearing that the jurisdiction of the Resources Committee on this issue is basically one of oversight of the Federal minerals estate, both onshore and the Outer Continental Shelf. Any legislative initiatives which our Committee might undertake are therefore limited, but Chairman Young and I purposely did not ask you to restrain your remarks to this sphere of influence because we are more than willing to pass on ideas we gain as a result of broader commentary to the proper committees of jurisdiction, such as Ways and Means and the Commerce Committee.

However, I have no doubt that we in the Resource Committee can make a difference to your industry and to the Nation as a whole by shaping legislation that does address access concerns or other Federal mineral leasing choke-points which may act to unduly restrict broader participation in both onshore and offshore exploration and production activities. An example is the Federal Oil and Gas Royalty fairness bill still in progress, which would create a statute of limitations on lessee/lessor obligations, strictly define lessee payment liabilities, as well as provide for reciprocity on interest for overpaid royalty payments. Another would be recently enacted legislation containing royalty relief provisions for a fixed volume of oil or gas produced from OCS lease tracts in waters of greater than 200 meters in depth.

I expect the Minerals Management Service to hold a Gulf of Mexico OCS lease sale this spring where certainly some of the tracts offered will be in deeper waters. Please make your bid envelopes bulge when you send those offers in. Treasury Secretary Rubin needs the extra cash and we could use the oil and gas resources which I hope you find under the deep and shallow water.

Let me finish by saying that our U.S. oil and gas industry and the service industries which it has spawned are vital not only to Texas and the Gulf Coast region, but to the entire nation from Hawaii to Maine and Alaska to Florida.

Yes, Houston, we do have a problem. The loss of industry jobs over the last decade is truly staggering in magnitude, but with your help and a motivated Congress, we can and must address the flight of industry capital and high paying jobs to sunnier business climates elsewhere. I urge all of you to hold the collective feet of Congress and the President to the fire until we do so.

I want to now welcome the Houston area Representatives that are here today and ask unanimous consent—and that is me—for participation with our panel. I ask that any opening remarks be limited to a few minutes so that the witnesses will have appropriate time to relate their views.

First, I would like to recognize Representative Sheila Jackson Lee.

STATEMENT OF THE HON. SHEILA JACKSON LEE, A U.S. REPRESENTATIVE FROM TEXAS

Ms. JACKSON LEE. Chairman Calvert, thank you very much, and to Chairman Young, we thank you for the opportunity for Houston to be actively involved in this very important process. So, I welcome you to Houston, and as I said earlier today as we met, this

weather is to reemphasize the importance of oil and gas in this nation.

As many of you know, Texas, and more specifically Houston, was at the center of the oil boom of the 1980's. That economic tidal wave created thousands of jobs and generated millions of dollars in revenue for companies, individuals, as well as state and local governments. Since those heady days, however, we have seen a steady decline in both oil production and employment. The resulting loss of jobs has truly been devastating to many communities and individuals. During the 1960's and 1970's there were many more Texas roustabouts on oil rigs than there are now. Since the employment high of 1982, jobs in the gas and oil extraction industries throughout the Nation have decreased by 357,000, which represents more than a 50 percent decline. Throughout the 1970's and 1980's while industry employment waxed and waned respectively, blacks made consistent gains. This is evidenced by the steady increase in the percentage of African-Americans within the petroleum and natural gas extraction business, from less than 3.5 percent in 1972 to a high of five percent in 1991. In particular, that impacts the 18th Congressional District which I represent.

Much like the auto industry, the energy industry is a highly integrated part of the United States' economy. Not only does the industry directly supply jobs but it is also intricately linked with the banking, petrochemical, rubber, machine and construction industries. Each $1 million invested in the oil and gas extraction industry creates approximately 20 new jobs in all sectors of the economy, certainly an important impact in this area. Hence, new growth in the energy sector directly translates into new jobs and economic growth.

It is for these reasons that I am happy to see this Congressional committee investigating this issue and looking for ways to encourage domestic oil and gas exploration and production, and doing so, I think, with an objective balance between this need and the environment. I have long been a strong supporter of legislative initiatives such as the deep water royalty relief and Alaskan north slope oil exports contained in Senate Bill S.395, which at all times, we have asked the questions about environmental impact and have been assured of the adequacy of those protections, and I will continue to be so in the future. I also recently hosted a meeting of President Clinton and chief executive officers of energy related companies to discuss some of these important issues. So far, the 104th Congress has concentrated on mainly budgetary issues. It is my hope, as we talk about a national energy policy, that we will see this Congress foster that direction and emphasize this policy to help our pressing domestic energy issues.

While the Federal Government should indeed encourage fossil fuel development, we cannot keep our heads buried in the sand and must realize that many of the lost jobs are never to return to the traditional energy sector. In addressing this problem, the Federal Government should look for new opportunities to assist in the development of alternative and renewable energy sources as well and involve all of those aspects for developing a national energy policy. I think we can do this combining environment, combining oppor-

tunity, combining needs for jobs and certainly a need for domestic energy production increase over the next decade.

I thank you very much, Mr. Chairman, and I would like to submit my remarks for the record.

Mr. CALVERT. Without objection. Thank you, Representative Jackson Lee.

Next, Representative Ken Bentsen.

STATEMENT OF THE HON. KENNETH E. BENTSEN, JR., A U.S. REPRESENTATIVE FROM TEXAS

Mr. BENTSEN. Thank you, Mr. Chairman. I would like to make a few brief remarks. If I might ask, I would like to ask unanimous consent to submit my written statement for the record.

Mr. CALVERT. Without objection.

Mr. BENTSEN. Mr. Chairman, I appreciate you and Chairman Young for holding these hearings to highlight the importance of the energy industry. About the middle of last year, the Banking Committee of the House on which I sit had the annual Humphrey-Hawkins testimony of the Chairman of the Federal Reserve Board and Alan Greenspan went through the Beige Book that is put out by the Board on an annual basis, and in there, we saw an alarming rise not just of the trade deficit but of oil imports as part of that trade deficit. And as one who has been hesitant to endorse something like an import fee for fear of its potential inefficiency, I do believe—and I think Chairman Greenspan, while never confirming anything to you, at least understood a fear that we may be having a transfer of wealth going on in terms of our oil and gas economy, in particular, our ability in terms of exploration and refinery operations. I think this macroeconomic concern transcends regional concerns that we have had as a nation in the past as it relates to price stability and even end-user concerns. So, I appreciate the fact that your committee is highlighting this issue. I think it is something that is of a national security importance.

I would also congratulate your committee for the work that was done on the deep water relief. I was glad to support that. That was a bipartisan issue. We actually had to fight it from a bipartisan perspective as well because some felt it was corporate welfare. I disagreed with that.

I appreciate what you are doing with the royalty bill program. My understanding is that the administration is working closely with you all on that and hopefully that will also be coming to the forefront soon.

With that, I will just submit my statement for the record and appreciate the panels that you are going to have.

[The statement of Mr. Bentsen follows:]

STATEMENT OF HON. KENNETH E. BENTSEN, JR., A U.S. REPRESENTATIVE FROM TEXAS

Mr. Chairman and members of the Committee. I want to welcome you to my hometown of Houston, and I thank you for inviting me to participate in this field hearing today. As the energy capital of the world, Houston is the ideal location to conduct hearings on the future of our nation's oil and gas industry.

America's economic stability and national security depend on a strong domestic energy industry. Recent federal statistics report that the U.S. imports more petroleum than ever before, and it is clear that we must address how to increase investment in domestic exploration and production.

Although many Americans may think of the oil and gas industry in terms of the 1970s, with its gasoline shortages and long lines, energy companies are rapidly changing with the 1990s and the growing free trade and interdependence of world markets. As a result, American energy concerns have posted remarkable profits in the last year, some at 50 percent higher than the same period a year ago.

But these numbers do not truly reflect the impact of the energy industry on the American economy, and in particular, on our growing trade deficit. In addition to automobiles and electronics, oil imports are one of the main contributors to the trade deficit, costing the U.S. $50.8 billion on foreign crude and other petroleum products last year alone.

This trade deficit, along with the emergence of a sophisticated crude futures market, could eventually undermine the stability of the dollar. Ultimately, an unstable dollar could lead to a further reduction in domestic production of oil and gas, which has already led to the bankruptcy of hundreds of American businesses and the layoff of over 400,000 workers nationwide. These are concerns we must face in the growing global marketplace.

Investment in domestic energy exploration is vital to the goals of increasing domestic energy production, creating jobs and helping American energy companies compete in the marketplace. Congress has encouraged such investment by providing royalty relief for energy companies that risk exploration in the deep waters of the Gulf of Mexico, and I strongly supported that measure.

These provisions will spur investment in technologies such as 3-D seismic surveys and floating platforms which have proven successful in tracking oil reserves in the Gulf. These technologies will also create jobs in the energy industry and further limit our reliance on foreign oil. Our energy industry needs these incentives to compete with an increasingly skilled and technologically-advanced workforce abroad.

But these initiatives are only the beginning. Spurring investment and increasing production of domestic oil and gas will not only help lower the trade deficit and foster global competition, they will also help American consumers in the long run, and it will create good paying American jobs from which our entire economy benefits.

I look forward to hearing from the witnesses here today. I know they will provide us with insightful analysis and innovative ideas to address these issues. Thank you.

Mr. CALVERT. Thank you, Congressman.

I will now introduce our first panel. Hopefully they were able to make it through the ice. First, Victor Burk with Arthur Andersen; Dale Steffes with Planning and Forecasting Consultants; Milton Holloway, Resource Economics, Inc. and William Gilmer with the Federal Reserve Bank. If you would like to come up to the head table. Thank you. First, we will recognize Victor Burk.

I would like to point out that we are under what we call the five-minute rule in order to keep the hearing going. So the little lights there, a green light; after four minutes, a yellow light will come on. We appreciate your testimony. Mr. Burk.

STATEMENT OF VICTOR BURK, MANAGING DIRECTOR, ENERGY INDUSTRY SERVICES, ARTHUR ANDERSEN LLP

Mr. BURK. Thank you for the opportunity to make some comments here this afternoon.

In my written statement, I have provided an overview of the forces that are shaping the U.S. exploration and production industry. Most of the material comes from research studies conducted by my firm Arthur Andersen, or jointly by my firm and another firm, Cambridge Energy Research Associates. The items that I provide an overview of in the written statement include industry trends, the industry responses to the low price environment that has existed for the last 10 years, the outlook for the U.S. exploration and production industry. Then, I will draw a few conclusions.

Just very briefly, the items that are covered in industry trends, and many of these are well known I think to the people in the industry and to the people here. But looking at what has happened

over the last 25 years with oil and natural gas prices, the number of wells drilled, crude oil production and consumption. I might point out there that 1995 marked the 10th consecutive year that U.S. crude oil consumption declined except for a brief increase in 1991 related to the war in Kuwait. Looking at oil imports as a percentage of total consumption in the U.S., which in 1995 reached an all-time high of 51 percent. Also looking at industry employment. During the last 10 or 11 years, 579,000 jobs have been lost in the U.S. oil and gas industry, excluding the retail segment of the industry and oil field service, with 393,000 jobs being lost in the exploration and production industry alone.

Then also looking at energy prices for end users, which since 1980, energy prices in the U.S. have dropped and in 1995 were 69 percent of the level that they were in the 1980's. So you might say that energy in the U.S. is cheap, especially relative to other countries.

Looking at the industry's responses to the low price environment that has existed, these fall generally into, I think, five categories. One, reducing cost; second, restructuring assets through buying and selling properties; third, redirecting exploration and development strategies which I'll talk a bit more about. Fourth, investing in new technologies which has reduced the cost to find and develop new reserves in the U.S. and to reduce the cost of drilling wells. And fifth, forming new alliances between exploration and production companies and service and supply companies.

Looking at the outlook for the U.S. exploration and production industry, this is based on the eighth annual survey that Arthur Andersen has conducted of the exploration and production industry. Last fall, we completed our most recent survey, and 121 companies responded to that. The survey results show that the people in the U.S. industry do believe that there are significant reserves yet to be discovered in the U.S. In fact, 92 percent of the companies that responded believe there are significant natural gas reserves yet to be discovered and 55 percent believe there are significant new oil reserves.

We have also looked at factors affecting capital spending decisions and oil and natural gas prices are the most important factors affecting those decisions.

Looking at the outlook for employment in the United States' exploration and production industry, we find that 63 percent of the companies that responded believe that there will be a decline in employment this year and 58 percent believe there will be a decline in employment in the year 2000 in the U.S. E&P industry.

Looking at the significance of problems that affect the industry. Uncertain oil and natural gas prices are seen as the most significant problems.

So what are the conclusions that can be drawn from an overview of these forces that are shaping the U.S. exploration and production industry? I think first, the industry will live in a tight margin environment for the remainder of the 1990's because oil and natural gas prices will remain relatively flat.

Second, many companies, both the major oil companies and the independent E&P companies believe attractive opportunities still exist in the U.S. It is clearly demonstrated by the significant in-

crease in U.S. exploration and development spending in the U.S. and their view that there are significant natural gas and oil reserves yet to be discovered in the U.S.

Third, the investment in new technologies by both large and small companies is paying off as demonstrated by the reduced cost to find and develop reserves.

Fourth, U.S. crude oil production will continue to decline and oil imports will continue to increase unless exploration and production companies are given the opportunity to explore for new reserves throughout the U.S.

And fifth, the use of natural gas will continue to increase and the demand growth can be met by increased U.S. production if exploration and production companies are given the opportunity to explore for new gas reserves throughout the U.S.

I think, to wrap up here, despite a depression that has lasted for 10 years in this industry, the leading U.S. exploration companies have both the capability and the desire to achieve the potential that exists in the U.S. exploration and production industry. I would encourage you to listen to and understand the views of those leading companies in today's and future hearings.

Thank you.

[The statement of Mr. Burk may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Burk.

At this time, I would like to recognize Congressman Gene Green who just joined us. Thank you for coming out here. I know this is your—we are sharing the districts. We are right here between the three members.

Mr. GREEN. We are actually in Sheila's district, but I am just across the street.

Mr. CALVERT. OK.

Next, the testimony from Mr. Steffes.

STATEMENT OF DALE STEFFES, PLANNING AND FORECASTING CONSULTANTS

Mr. STEFFES. Thank you, Mr. Chairman and Members of Congress, staff and attendees.

My name is Dale Steffes and I am an independent strategy consultant. I formed Planning & Forecasting Consultants 23 years ago prior to the first embargo. Recently, George Bush, Governor of Texas, appointed me to serve on the Interstate Oil Gas Compact Commission.

I want to personally thank the Committee for holding these energy hearings in Houston. I have long held that more than half of the important exploration decisions are made in Houston for all the wells of the world.

To the great majority of American citizens there is no definable energy problem. All forms of energy are adequately available at acceptable prices to almost everyone. So what is the energy problem? Just because they do not recognize it does not mean that you folks do not recognize it. I applaud you for recognizing it. I think the energy problem should be considered as two separate problems.

First, the U.S. petroleum producers are being forced to use false domestic oil price signals. Second, the cost of maintaining a secure

oil supply cannot be economically quantified so we can deal with it.

On the first one, the domestic energy resources will be underdeveloped in the United States if we are forced to use that. All other energy policies that I know of that has been proposed by many, many people try to correct this false oil price signal. They include tariffs, price floors, tax incentives, cheap access to public lands, government subsidies, government help; however, all come with increased consumers' energy bills either directly or indirectly.

Concerning the other one, only the President can make the necessary intangible trade off decisions between the country's oil supply security, balance of trade and international competitiveness. It would be a serious error if the world's remaining superpower becomes vulnerable to foreign oil suppliers' demands. Our U.S. State Department is always quick to use the economic weapon of interfering in other nation's oil trade. That weapon could soon be turned against the United States unless steps are taken to avoid that threat.

On January the 21st of 1993, we offered the Clinton Administration a plan to create, design and operate a national energy stability policy that could resolve both of these energy problems. The following are the projected annual financial effects from this. It would reduce our energy import bill and balance of trade by $12 billion a year. It would also increase the energy producers' income by about the same amount, or about 15 cents a million BTU on all domestic energy produced. It would eliminate the threat of lower oil prices on domestic producers. It would eliminate the Department of Energy's oil security expenditures by an estimated six billion. It would increase U.S. income taxes collected by four billion. It would decrease the Department of Defense's required expenditures by X billion. It would maintain U.S. oil dependency at a safe, acceptable level and all of this without increasing the consumers' energy bill. In today's budget-minded Congress, an annual $10 billion net benefit ought to be enough for serious consideration. Now, our energy policy would naturally increase the employment in the energy production sector but this probably would be offset by decreases in employment in the Department of Energy and Defense.

The principal reason we can make this offer is because our energy model better depicts the world energy—the real world energy. OPEC and especially the Middle East may own the oil, but the United States still owns the market, we have control.

Former OPEC Secretary General Subroto acknowledged our policy would perform as projected.

Last year, over 50 members filed a bill to eliminate the Department of Energy. Our policy would in effect perform the DOE's prime function of oil security at no cost to the Federal Government, and allow for the elimination of DOE's energy security function. Needless to say, the Department of Energy is reluctant to respond to our proposal to privatize their energy functions.

In closing, I would like to submit for the record five documents that did not qualify for inclusion into our written testimony. First, a copy of our formal offer to President Clinton; second, a Trend Discontinuity listing the 400 largest public domestic energy producers by their percentage, and it has combined all the energies in

there, it is a powerful little report; a preliminary edition of my book IRREVERENT ENERGY WISDOM, which is seven years of columns for the JOURNAL OF COMMERCE for the last seven years of reporting what is going on; I have a book review for Newt Gingrich's book TO RENEW AMERICA, I think he left out a chapter and I wrote that chapter for him, if you are going to renew America, you have to renew the oil and gas industry. Lastly, I have a collection of background papers on the evolution of an energy strategy consultant.

I would be honored to answer any questions you have, or your staff, now or later. I also extend our offer to work with this committee any way we can.

Thank you for allowing Planning and Forecasting to formally submit to the House of Representatives our solution to the United States' two real energy problems—false oil price signals and security of oil supply.

Thank you.

[The statement of Mr. Steffes may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Steffes, and we will include your material for the record, if there is no objection. I hope you did well on your book royalties.

Next, Mr. Holloway.

STATEMENT OF MILTON L. HOLLOWAY, RESOURCE ECONOMICS, INC.

Mr. HOLLOWAY. Mr. Chairman and other members of the Committee, I am pleased to present a statement to your committee today concerning the economic and employment implications of declining oil and gas production.

I apologize for being late, Austin is kind of iced in today and I live on a hill in west Austin.

The paper that I have provided to you, I will summarize in three points. The first is in examining how important this industry is—and I want to focus on the state of Texas rather than the U.S. because that is where my primary experience is. Texas, as you know, represents a major portion of the U.S. energy industry.

The first point I want to make is that in understanding the importance of this industry to the Texas economy, one needs to worry about how to measure that and secondly, any measure that you have of the importance of the industry has to be relative to something. And I want to make that comparison to what the industry amounted to in 1972 prior to the first embargo, because the intervening years since then, in my opinion, have been unusual in the long-term, and so for a proper perspective, we ought to make the comparisons with an earlier period, and I have selected 1972.

Now there are various ways of measuring the importance of the industry and I want to focus on the ones that are always listed, and that is production, but also the related industries of chemicals, refining and oilfield machinery. And to examine the physical production, the value of production, the gross state product and finally, the employment that goes along with this industry because as you examine these different measures of performance of the industry over a period of time, you get very different implications. So my first comment has to do with the measurement.

The second one has to do with measuring the economic impacts of an incremental change. If we are concerned about the continued decline, which we certainly are, then we need to know how to measure the economic impact of that continued decline, and I have some measures that I offer.

The third point has to do with what might we do to slow the long-term decline that is now certainly in progress. And I believe there really are two overriding issues that will determine that.

First, the matter of measuring the importance of the industry. When I compare 1972, prior to the oil embargo of 1973, with today's level, oil production is down by 57 percent, gas production is down by 53 percent. But if we look at the value of production, we have to consider prices and we take the inflation out of those numbers, so we are talking about the same dollars now as 22 years ago, then you see that oil prices have actually gone up about 23 percent in real terms, but gas prices are up 180 percent—gas was very cheap in the old days.

So the value of production, even though physical quantities are down by roughly 50 percent, the value of production is down by only 27 percent.

Now let us look at the other typical measure and that is the gross state product, which is a gross measure of income to the economy. The production industry actually has shown a 39 percent increase in real terms in the 22 years since 1972. If we look at employment in the production industry, it has risen by 57 percent.

So how do we explain these seemingly inconsistent sets of factors—production is down by 50 percent, value is down by 27 percent, but the gross state product is up by 57 percent and employment is also up.

Well, the answer of course is efficiency in production. The experience especially of the last 10 to 15 years has shown that we have discovered how to recover oil and gas resources much more efficiently than in the old days. So while the production declines are certainly alarming, taken into proper perspective, they are not nearly as important as the aggregate measure. So technology is the answer to explaining the differences in these trends.

Now the impacts of a change are usually measured in economic terms by multipliers, and the gross state product multipliers for this industry range between 1.5 and 2.9, which means one million dollars of production is going to result in $1.5 million to $2.9 million in increased GSP to the economy.

And the employment numbers are larger, 1.9 to 3.5 for every employee directly in the industry, then total throughout the economy is between two and 3.5.

Well, what is the outlook for the next 15 years? If the trends continue, we will lose another 30 percent of oil and gas production in Texas, and that could amount to an additional loss of 88,000 jobs and $6.7 billion per year in gross state product losses. So that is how important it is to keep this decline from continuing.

The key factors that will slow the decline are the now obvious need for the electric utility industry to convert back to natural gas and that will greatly increase both the production and demand for natural gas. The other important topic is the continued application of technology to the recovery of conventional oil and gas, especially

natural gas. We have seen huge increases in the productivity of wells at lower cost, and that is the key to our continuing ability to extract the most possible from our limited resources.

Thank you.

[The statement of Mr. Holloway may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Holloway.

Mr. Gilmer.

STATEMENT OF ROBERT WILLIAM GILMER, FEDERAL RESERVE BANK

Mr. GILMER. Yes, thank you.

I would like to thank the committee for the invitation to appear today and for a place on your agenda. I do, as an employee of the Federal Reserve Bank of Dallas, have to say that the views expressed are my own and not necessarily those of the Federal Reserve System—I cannot speak for Mr. Greenspan.

It is in my capacity, however, as a Houston-based economist for the Federal Reserve that I have developed a strong interest in the relationship between oil and gas and the Gulf coast economy. The vast petrochemical belt that stretches along the Texas and Louisiana Gulf coast is one of America's greatest industrial assets. The Gulf of Mexico has emerged as one of the most active basins in the world, and Houston remains a world center for new energy technology and engineering.

Employment in the oil industry clearly remains under pressure. Even if we mark the end of the oil bust at 1987, jobs have declined in the industry. Extraction jobs and production services and machinery continue to fall and are down by 15 percent. The reasons—low oil and gas prices, of course, put pressure on revenues, wages and on domestic production. Not just low prices, but volatile prices have an effect on what we see and what we measure in this industry. Oil companies now, because of volatile prices, must be able to ramp operations up and down quickly. This flexibility is often purchased with outside suppliers and contractors with less of a willingness to make a long-term commitment to hire. Contractors and law, accounting personnel, janitorial services now share this oil-based risk.

We have, of course, seen a shift to overseas operations and the new technology that Mr. Holloway referred to, increasing efficiency.

With declining employments, there have been some important marked trends within the industry. The industry has sharply improved productivity since 1987. These trends in employment have worked equally against employees who earn an hourly wage and those that work for a salary in management or technical areas. And these trends have increasingly moved jobs into metropolitan areas. By 1993, over 77 percent of oil industry payrolls were within the metropolitan United States and half of the oil jobs in the United States are found within about 25 metropolitan areas. It is a list that gets shorter over time.

The relative growth of the oil cities within the industry has been most dramatic in Houston, one of the few cities where oil jobs have actually risen since 1987, about 4600 jobs. The growth of different oil cities now follows a pattern of industrial clustering that is seen

in many industries, but especially in high technology. The oil companies are in these cities for an access to a pool of skilled labor, a pool of industry-specific skills and defined specialized oil industry suppliers. Access to domestic oil fields is less of a priority for these urban jobs. The companies pay a premium in wages to be in cities with a large number of other oil companies, increasingly a global business as domestic production declines.

The best predictor of where we will find a producer or a headquarter facility is where other producers and headquarters are located. Service and machinery companies similarly seek their own companies, but they would also like to be close to other producers and headquarter establishments, or close to their customers.

I mentioned the oil industry's need for outsource and contract employment, temporary workers and consultants. Each of these categories of employment provides some important exceptions to the way we normally count employment. Reliance on outside suppliers means the effect of oil industry expansion and decline is felt almost immediately in other industries—accounting, law, janitorial, real estate—almost as soon as within the oil industry itself.

In 1995, for example, a year that in the second quarter integrated oil profits were up nearly 100 percent, in Houston, we saw the sector decline over most of the year. Machinery and services were up, but business services, where we would find the outside contract suppliers, Houston saw a 7.6 percent jump in employment for over 9000 jobs.

It is clear we need to know much more about the relationship between this new pattern of outside buying and hiring. As the industry becomes a global business, it is clear that these urban jobs and the impact of urban oil are having effects on our economy that we understand less and less.

The forces driving these trends—low prices, volatile prices, technology—are as strong as in any other industry I can think of, and the oil industry would make a wonderful place to conduct a study of exactly this kind.

Finally, as we think about the health of the oil industry, even in these urban segments, we see significant downward pressure on employment. America's oil services technology in many ways is the envy of the world. It is an industry with a global reach and yet we continue to see downward pressure because of the productivity trends that we have already discussed.

When we look at manufacturing employment in the United States, we never expect to see that increase from the current 18 million jobs we have now. Every new factory job we will have over the coming decades will probably be offset by a closing or layoff elsewhere. It does not mean anything is wrong with what is truly a world class factory system, but new technology, high levels of productivity that hold down costs and keep us competitive, prevent the growth of new jobs.

In our global energy business, we are going to see similar trends over time, basically as the growing reliance on technology and highly competitive environment restrain growth in employment in many of these areas as well.

Thank you.

[The statement of Mr. Gilmer may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Gilmer.

We are now going to go into the questioning phase for this panel. We will have plenty of opportunity to ask each one of you several questions. I will start that off.

Mr. Burk, your survey of companies clearly exhibits more optimism about the natural gas reserves potential for significant new discoveries, that is other than oil. What do you think is driving this?

Mr. BURK. I think there is, probably in general, evidence to support a belief that there are more undiscovered gas reserves in the U.S. than oil reserves. And there will be some speakers I think later today who will—who might make some comments on that. I think that is what is driving the response, I think 92 percent of the companies in our survey said that they believe there are significant natural gas reserves yet to be discovered, compared to I think 55 percent or so who said there are significant oil reserves.

Mr. CALVERT. Your testimony also provides a timely overview of industry constraints, practices and attitudes. One thing I found puzzling is why does drilling cost per foot for natural gas wells exceed that for oil?

Mr. BURK. Well, let me preface my response by saying I am not an engineer and I think that some of the other speakers here on other panels would be better qualified to answer that question.

Mr. CALVERT. OK, I will save that one for later.

Mr. Steffes, your attachment to your testimony indicates your idea for the import tickets earned by producing domestic energy sources was offered to the Clinton Administration early on, but the 1993 budget reconciliation plan originally put forth had a straightforward, as we remember, the BTU tax, until cooler heads prevailed. How do these ideas differ?

Mr. STEFFES. They differ significantly. A BTU tax just puts a tax on your consumption here and it raises your energy bill. My system takes the money away from the foreign producers who were granted great oil reserves, especially in the Middle East, and lowers their price, and takes that money and gives it to my domestic producers proportional to how much they produce. My part of it is all mechanical in there, but it would take that away.

Now it is my judgment that we would transfer—instead of paying for our foreign oil, $40 billion, we would only pay $28 billion for the same amount of oil and give that money to my domestic producers. That would encourage them to go out and look for oil, because that is a premium they would get. That is about $12 billion a year, according to my model. That would be 15 cents a million BTU and would have them all working, they would go back to work for it.

The other thing that it does, this system eliminates the threat of low oil prices on domestic producers. We are still threatened with $10.00 oil in the United States. People are calling up still wondering if Iraq comes back in with two million barrels a day, what is the price going to go to? And for that reason, the lenders do not lend money to the oil exploration people much over $10.00-$12.00.

Mr. CALVERT. Thank you. I have got a couple of other questions, but I will get back to you on the second round.

Mr. STEFFES. Sure.

Mr. CALVERT. Dr. Holloway, you seem to be enthusiastic about Union Pacific Resources' success in the Austin Chalk. What do you think made Union Pacific so smart and will others reproduce their success? What made it work for them?

Mr. HOLLOWAY. I asked them that and they said technology and long-term knowledge of the industry.

Mr. CALVERT. So they keep it a secret.

Mr. HOLLOWAY. Well, I guess that is true.

Certainly the knowledge of the resource base has got to be a big explanation for that, and I know that Dr. Fisher will be on a later panel, but the intelligence about where those deposits of oil and gas lie and how to tap them efficiently with precision has got to be a strong suit of UP Resources.

Mr. CALVERT. OK, thank you.

Mr. Gilmer, your testimony is interesting. Perhaps we should stop making reference to the oil patch and start calling it the urban industrial cluster. Houston, in my mind, is to oil and gas as Silicon Valley in my state is to computers. Your conclusion about productivity gains from technology enhancements shaping job trends is no doubt accurate, but why does this not translate into increased or at least level production value—barrels of oil, cubic feet of gas—domestically?

Mr. GILMER. We have many opportunities to find oil around the world, and it becomes a question of producers actively seeking the cheapest oil. And as it becomes more difficult to extract our oil and the cheaper alternatives are elsewhere, the answer is other things equal, they have made a decision to go elsewhere.

Now the technology continues to leave American oil in the picture, oil that would not have been in the picture without the advance in technology, although we clearly have been losing ground relative to oil strikes in Colombia, for example, which are world-class fields that have recently been found there—cheaper elsewhere. And given the current economic environment, the rational decision is to look elsewhere.

Mr. CALVERT. Thank you.

Next, Sheila Jackson Lee. Sheila, do you have some questions for the panel?

Ms. JACKSON LEE. Thank you.

I think if I could pursue questioning with Mr. Burk, and again, let me thank all of you all for being here.

Victor, I am not sure in your remarks whether you commented on this, but an earlier question that was raised to some of us who were in an earlier meeting was a question of domestic oil prices and the fact that they are at a certain level, and whether or not that question or that aspect of the oil business, even though we see that there have been percentages of increase over the last decades, two or three decades, in fact has more of a major impact of diminishing or decreasing or limiting domestic energy production as opposed to the regulatory effect. Would you say or would your numbers suggest that they are inter-related?

Mr. BURK. I made a comment that for the domestic exploration and production industry that companies would be living in a tight margin environment for the rest of this decade because both oil and

natural gas prices would remain relatively flat. With regard to oil prices, absent some political event that might cause an increase in prices, all the indications are that what we have seen is that oil prices here in the U.S. will remain in a fairly narrow range from where they are now for the next few years.

One of the other panelists mentioned the impact that Iraq's reentry into the oil market could have. Certainly that would probably cause some spike in prices on a global basis for a brief period, which would impact the prices here, but in general, there is more than enough supply and capacity now to meet the increase in demand for the next few years. That picture though could change very much going beyond the year 2000 as demand continues to rise and I think there are some analysts in the industry who believe that there would have to be new supplies found in order to meet that growth in demand, and that would in turn spur an increase in prices.

Ms. JACKSON LEE. Thank you.

Mr. Steffes, am I to understand that you think there is a role for something like the Department of Energy, but you would like to redefine it?

Mr. STEFFES. Well, no, I think that it can be replaced, privatized—the energy part of it. Now the nuclear part of it has to be done by somebody, and I do not make any reference about that.

But their principal function when they were formed in 1977 under the Carter Administration was to take care of oil security so that we would have an adequate oil supply. That was their general function. As far as I am concerned, they have got a report that was supposed to have been out, the Secretary instigated it in December of 1993, it was supposed to be out in December of 1994, an interagency report on oil security. I have been writing a special newsletter just to get them that report out, and it is hung up either in Treasury or State Department somewhere, and will not come out, to address that subject of oil security for the United States. One of the departments is holding it back.

Ms. JACKSON LEE. I am going to look into that as well. We probably would have a lengthy discussion on our disagreement on that point of the Department of Energy's responsibilities, but I wanted to clarify and I now understand. I think there are some important aspects of research and development that they do that I think are very important, but I am glad that I now understand your point.

Mr. STEFFES. I do not disagree with that. But I say if you make the price correct in the United States and the producers understand that it is right, between the producers and the consumers, without cheap foreign oil, they will have a stable price and the system will work perfect.

Ms. JACKSON LEE. Again, as I said, I know that will be a lengthy discussion, but I thank you for clarifying your point.

Mr. Holloway, very briefly, you had noted an aspect that is important to the industry, research and development. Is that something that you think the industry is now actively involved in, or is that a partnership relationship between government and industry, inventing new technology?

Mr. HOLLOWAY. Well, it is certainly something that companies are doing. I do believe that it is a proper role of government to

enter into those partnership relationships. In fact, I guess my general opinion is that the U.S. needs to be putting more investment into R&D of all types, certainly in this industry, for the long-term.

Ms. JACKSON LEE. You have solidly answered my question.

I will move quickly to Mr. Gilmer. Your economic assessment, I would like to translate it to this hub here in Houston, would your project that with a different regulatory approach, would it trickle down to Houston in the next two decades or sooner than that in terms of job creation for this industry?

Mr. GILMER. Anything that happens in the oil industry will probably happen first in Houston in terms of employment.

Ms. JACKSON LEE. Excellent.

Mr. GILMER. We have global skills and positive developments at home and overseas are both good for this economy.

Ms. JACKSON LEE. Would you see that in a five-year range or ten-year range?

Mr. GILMER. What kind of proposal did you have in mind specifically?

Ms. JACKSON LEE. If, for example, there was a major establishment of a domestic energy policy that went into effect by the year 2000, for example, and had some impact in domestic energy growth, how long would it take before there would be an economic impact specifically as it relates to job increases?

Mr. GILMER. Well, it depends on the shape of the policy per se, but as soon as any kind of—even at the planning stage, even as planning begins, it begins in Houston for this industry. Most of the management and technical skills for the domestic industry, and increasingly for the global industry, are housed here in Houston. It would be extraordinarily important for the Houston economy. Any kind of development in the energy industry is immediately felt here. In terms of the long-term employment impact, it is going to depend on the shape of that policy, but the technical skills, the top of the pyramid in terms of skills and white collar jobs would be primarily felt here in Houston.

Ms. JACKSON LEE. Thank you. Thank you, Mr. Chairman.

Mr. CALVERT. Thank you. Mr. Green, do you have some questions?

Mr. GREEN. Thank you, Mr. Chairman.

Dale, let me ask you some questions about your import ticket. I know you submitted it in 1993. Have you had a chance to look at that and compare how that would impact the GATT treaty that was approved last year, and if that would still be permissible?

Mr. STEFFES. It is my interpretation that it would be permissible. The Governor of Nebraska has written a policy for this and he looked at that and it is the same thing. We have the right to protect our own industry. We would be using higher priced energy than the foreign nations would, that is our disadvantage to my policy. But I think it would be acceptable to GATT.

Mr. GREEN. OK. One of the concerns all of us have is to increase, you know, obviously our domestic production in the national security issue you mentioned. Do you know the percentages? Because I have been told the larger percentages of our imported oil typically is from Mexico and Venezuela, and sure from the Middle East, but do you know the percentages of the total imported oil we receive

and how much would be from Venezuela, for example, or from Mexico as compared to the Middle East?

Mr. STEFFES. I do not—no, I do not have that right now, but oil is very fungible, that is an easy number to look up. I would say that I think the Middle East yet is 18 percent of our 50 percent, in that range; and Mexico is probably a little bigger and Venezuela and Colombia will be coming in.

Mr. GREEN. From what I understand, Mexico is just a little larger than Venezuela and a great deal of our imported oil comes from our closest neighbors and, you know, not necessarily from—although we understand that whether the oil is from Venezuela or Saudi Arabia, the price is a world price that you are going to work. You know, the concern on the security is that we do have fairly close relations with each of the two countries anyway, with Venezuela and Mexico.

Mr. STEFFES. That is the principal problem for the world, for us, is we have a one universal oil price with little differential for reduction in quality, and it is always wrong. It is too low for domestic producers and higher than necessary for foreign producers. My system establishes that differential, and we have to accept that differential.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. CALVERT. Thank you, Mr. Green. Mr. Bentsen.

Mr. BENTSEN. Thank you, Mr. Chairman.

Mr. Gilmer, let me just start with you. First, I would say that Alan Greenspan sometimes has an uncanny knack of not even speaking for Alan Greenspan.

[Laughter.]

Mr. BENTSEN. And actually tends to lecture Members of Congress more than anything else on monetary theory, which I think we are better for.

Let me ask you about your—in your discussion of this new sort of energy industry, I think it is almost what Robert Reich calls symbiotic analyst or something. Is that our new competitive advantage in the oil industry in this country?

Mr. GILMER. Well, it is not really new, but it has surfaced as, in many ways, what we have left, I suppose. You know, when the North Sea was discovered, the British deliberately set out what they wanted. They said, you know, some day we are going to run out of oil and what we want to have left is an oil service industry like the Americans have. And in the 1980's, there were a number of studies conducted on their failure to do so. Why could they—what they wound up with were supply boats and a certain level of construction activity, but the Americans continued to keep the grip on the oil service. And American patents, American technology and what we had learned here at home over decades and decades simply proved impossible for them to beat. And where we have developed solid foreign competition from the French and the Norwegians, for example, it has typically been with some substantial government subsidies on their part. But we have a tremendous advantage in our oil service industry based on experience and that holds us in good stead. As it becomes a global industry, as work has moved overseas, we have seen the Slumber Jays, the Baker-Hughes and the other——

Mr. BENTSEN. Let me ask you this. Otherwise, we have lost competitive advantage in the production side. Does it at some point concern you that that trade-off, where with some widgets we are not concerned if we do not have the competitive advantage because we will make other widgets. But in this case of production, are we concerned that there is a real transfer of wealth? Is there enough of a concern that we ought to attempt some sort of price stability? Again, I have always been concerned that import fees and things like that are inefficient and probably will not work. They are politically difficult as it is. And now with GATT that raises other questions also. But do you think that there is a need for that?

Mr. GILMER. Well, you know, in the perfect world the economists would like to live in, we want free trade, we want no subsidies, we want no constraints. In terms of free trade, we do not live in a perfect world and there are questions of national security. We saw what happened in 1990, in the Middle East, the concentration of resources in a few hands.

These are issues that I am not sure the economist is fit to deal with and yet it is precisely the table over there that has made those choices. It is also—we also do not like constraints. We have to say I do not like to see the constraints that keeps us confined in terms of offshore activity only in the western Gulf of Mexico.

Mr. BENTSEN. Right.

Mr. GILMER. And yet, you can understand the important political implications of advocating that we go elsewhere because of the environmental constraints we face there—very difficult choices that have to be made that sometimes take on non-economic dimensions. The economic part of it, I agree with you absolutely that these are very inefficient and very difficult for economists to advocate any of those fees.

Mr. BENTSEN. All things being equal in an imperfect world, you sometimes choose inefficiency over efficiency perhaps.

Mr. Burk, let me ask you two things, and part of this is a lead-in from my discussion with Mr. Gilmer. If I understand correctly from your survey and research, producers or the industry as a whole believes that greater access to reserves, domestic reserves, which also raises political questions such as Alaska and the outer continental shelf and the coast of California and New England, that they would see that as a positive. Reserve, if I understand correctly, is a function of price certainly and the ability to withdraw those reserves. But is that inverse to supply? And I wonder—I mean, do we have a problem, do we create a potential problem if we bring too much access to reserves too quickly, that then we have an inverse relationship on price, create more volatility?

Mr. BURK. Theoretically, you do, but I really do not see that as a real problem here. With the U.S. importing 50 percent of its oil consumption, you know, in this last year, all the oil that can be found and produced here in the U.S. will be used here in the U.S. Natural gas consumption is increasing and natural gas production has increased every year since I believe 1986 and it is expected to continue. So I think all the natural gas that can be found and produced will be consumed here. You know, we have lived in a period of price volatility for many years now, it has been ten years since prices collapsed in early 1986, yet what we have seen since 1992

is an increase in exploration and development spending here in the U.S. And I think if more areas were opened up, we would see much more money being spent by the U.S. exploration/production companies, both majors and independents, to explore for and develop reserves here.

Mr. BENTSEN. Even if prices continued—I just wonder, if you were bringing more reserves on line, would prices not be going down? I am not sure where I would see that the investment would be worthwhile.

Mr. BURK. Well, for oil, we would just be replacing, to the extent we can increase domestic production, we are just backing out the imports of foreign oil. Oil prices are determined on a global basis, and as Dale mentioned, there are some differences because of location and quality differentials for the oil. But you know, from the standpoint of additional oil production here, certainly if prices collapsed because of some political reason or, you know, flooding of the market by the OPEC producers, that would have an impact on prices here which would in turn have an impact on investments made by companies, and we saw that back in 1986 and 1987. But I think within the parameters that we are working under now, that increased exploration here and adding reserves and adding production here in the U.S., we are not at great risk of causing a price collapse.

Mr. BENTSEN. I know my time is up, I guess my question really was would that not compete against existing domestic exploration that is going on?

Mr. BURK. I do not feel that it would. I think some of the panelists later on today are better qualified to answer that because they are the companies that are making the investments. You might ask that question of them and see what their response is, but I do not think it would.

Mr. BENTSEN. Thank you.

Thank you, Mr. Chairman.

Mr. CALVERT. Carrying on what Mr. Bentsen was talking about and obviously his concern about transfer of wealth, if our domestic production continues to drop, do we risk losing other industries which are extremely important here to Houston, such as refining, petrochemical, manufacturing which employs great numbers of people obviously, as we continue to be more dependent on imported crude. That is for anyone—do you believe that that could occur? That we could start losing those major industries?

Mr. BURK. It will to some extent. In fact, you know, we are seeing a lot more refining capacity. Refining capacity has been added and will be added in the Middle East countries as a lot of the OPEC producers see a way to add value to increase their revenues by selling petroleum products at a higher price than what they can sell crude oil. And U.S. imports of petroleum products has increased over the last years.

Mr. CALVERT. That is almost—well, as big a fear anyway as the value-added products that we have from the oil and gas industry, if we lose that to other countries.

Mr. BURK. But we have also seen, you know, over the last probably 15 years now, rationalization of the U.S. refining industry as many of the smaller, less efficient refineries have been shut down

and a decline in the level of employment in the refining industry in the U.S., not to the extent that we have seen it in the exploration and production segment, but certainly a decline there as well.

Mr. CALVERT. Any other comments on that?

Mr. GILMER. I would just like to comment, again on the economic impact of that downstream industry. We tend to look at the small number of jobs directly within chemicals and refining, which is of course a very capital-intensive, highly-automated industry. But the construction impacts of that industry are tremendous on the Gulf coast economy. If you look over the last 25 years the typical city on the Texas or Louisiana Gulf coast, compared to an inland city in either Texas or Louisiana, construction over the last 25 years has averaged 25 percent higher on the Gulf coast cities. Actually the northern cities have grown a little faster over those 25 years, the only reason I could give you for that is the continued construction and design and turn-around and maintenance of that tremendous petrochemical complex along the Texas Gulf coast. And as the companies invest in those plants, we have seen boom and bust cycle associated in Houston and along the Gulf coast very much with that type construction work.

Mr. CALVERT. I have one other question for all of you. I think all of you are economists. I remember Harry Truman's remark looking for a one-armed economist but never could find one. Many of us in Congress are not economists and we keep hearing the rhetoric that we believe to be proper incentives, or instead subsidies or corporate welfare. How do professionals such as yourselves see that? If other nations take a similar or sometimes even more predatory type of tactics, incentives, whatever you want to call them, how can it be a subsidy if the United States follows suit? Do you want to comment on that?

Mr. STEFFES. I do not follow your question quite totally, but you are talking about subsidizing the energy industry through——

Mr. CALVERT. Well, there are those, for instance, who will say that what we are trying to do in royalty fairness in making collecting royalties on oil more efficient, is corporate welfare. I do not think anyone at this table would say that, but there are those in Congress who would say that. And it is not a partisan issue, by the way. There are Republicans who would say that, there are Democrats who would say that. Or giving incentives to drill in deep water is corporate welfare. Would you consider that corporate welfare, any of you?

Mr. STEFFES. I do not think it is much more corporate welfare than if you treat it as a private property and give a royalty of an eighth for private property, you ought to give it to our community property, which is what we own together, offshore is in community.

I stress in my written paper that the reason the United States developed their energy is because we had private property, somebody drilled a well, the guy next to him drilled a well to look for it too, and then we needed a regulation because the oil flowed underneath it. But a regular royalty compared to the private should not be considered wrong for the government to take too, I do not think.

Mr. CALVERT. Any other comments from the panel?

[No response.]

Mr. CALVERT. Well, thank you very much for your testimony, we appreciate that, and we are going to call up the second panel. Thank you again very much.

Mr. GREEN. Mr. Chairman, just on a personal note, the first time I met Mr. Steffes, I think we both offered ourselves to the electorate about 24 years ago in state legislature.

Mr. STEFFES. That is right. I lost and you won.

[Laughter.]

Mr. GREEN. Different races, different districts.

Mr. CALVERT. Thank you very much, gentlemen.

One of our special guests today unfortunately was unable to make it, Carole Rylander, Chairman of the Texas Railroad Commission. I think she fell victim to the ice in Austin, and so was unable to get out of the house, I think there is snow and ice out there. So filling in for Carole is David Beshear, Director of Communications for the Texas Railroad Commission.

Next, Pete Brown, Chairman of the Oklahoma Resources Board; William LeMay, Director of the New Mexico Oil Conservation Division; Ernest Burguieres, Commissioner of Conservation and Assistant Secretary, State of Louisiana Department of Natural Resources—I know I have mispronounced that—and Garry Mauro, Commissioner Texas General Land Office and I think Garry may not have made it because of the ice also—Mauro, Garry Mauro. I had a question mark, I do not know if Garry made it or not, I understand he was trying to get here.

I would like to thank the gentlemen for testifying for us today. Again, I would like to explain we are under the five minute rule. If you could keep your testimony to five minutes, we would appreciate that. And first, David Beshear, Director of Communications for the Texas Railroad Commission. David.

STATEMENT OF DAVID BESHEAR, DIRECTOR OF COMMUNICATIONS, TEXAS RAILROAD COMMISSION

Mr. BESHEAR. Mr. Chairman, Representative Lee, Representative Bentsen, on behalf of Carole Keeton Rylander, the Chairman of the Railroad Commission of Texas, who was unable to get here from Austin due to ice today, I submit her written remarks and a brief verbal summary.

Streamlining the regulatory process and initiating economic incentives are key investments that have made a positive difference in Texas, and which should be initiated at the Federal level.

First, streamlining the regulatory process. Chairman Rylander believes the Railroad Commission may be able to simplify or eliminate much of our current oil regulatory program by acknowledging the decline in our ability of wells to produce. Chairman Rylander supports a partial oil deregulation program which is currently under study by Commission staff. If implemented, this deregulation program would save the Commission $300,000 a year in reduced costs and potentially save the industry over $40 million a year. This savings would come in reduced regulatory compliance costs through lower numbers of required well tests, reduced paperwork and the elimination of meaningless production limits.

Chairman Rylander's bottom line is that our regulatory mechanisms were designed at a time to protect wells from each other when Texas wells could make over 1000 barrels per day. Today, we have 90,000 wells that produce less than three barrels a day and we no longer need these protections. Her position is that times have changed and regulation should change with them.

Point two, economic incentives. Economic incentives work, 7938 high cost gas wells have been drilled since 1989 under a high cost natural gas incentive exempting these wells from severance taxes for ten years. These wells produced four percent of all natural gas in the United States in 1995 and have already created $22 billion in economic benefits for Texas with an investment in severance tax writeoff of only $568 million for the state. This is a benefit Texas would not have seen without this incentive.

Chairman Rylander believes increased production resulting from economic incentives and reduced bureaucracy will mean greater energy independence.

I will close with a short quote from her. "Every barrel of oil or MCF of natural gas produced in Texas helps us back out foreign imports. I do not want us to be held hostage by Iraq or Iran or any of the ayatollahs, I want us to back out that foreign crude with our Texas oil and natural gas. It is available, it is affordable, it is acceptable and it is American."

Thank you.

[The statement of Ms. Rylander may be found at end of hearing.]

Mr. CALVERT. Thank you, David.

Next, Pete Brown, Chairman of the Oklahoma Resources Board.

STATEMENT OF PETE BROWN, CHAIRMAN, OKLAHOMA RESOURCES BOARD

Mr. BROWN. Thank you, Mr. Chairman and committee members. It is my pleasure today to represent the Oklahoma Energy Resources Board, which is the nation's first governmental entity created specifically to advance the dual purpose of natural gas and oil-related education and environmental restoration.

In my written summary, I discuss a number of issues before the State of Oklahoma, legislative issues that the state has passed in recent years and issues which the state is working on to pass, to aid the oil and gas industry in the state of Oklahoma.

I would like to focus my oral comments today on the agency which I represent as its Chairman, the Oklahoma Energy Resources Board. The Oklahoma Energy Resources Board was established by the Oklahoma state legislature in 1992 and set up a board of 21 individuals from segments of the oil and gas exploration and production industry. The board consists of independents, major oil companies, royalty owners and crude oil purchasers.

The purpose of the board was to set a fund up by assessing two cents on every barrel of crude oil produced in the state of Oklahoma into a fund which the participants in the fund could withdraw their money at the end of the year if they so desired, which made the fund a voluntary fund.

The two cents a barrel would be used specifically and statutorily mandated for two purposes, as I said before; one—and 50 percent of the money goes to an environmental restoration program to ad-

dress historic sites, oil and gas drill sites in the past that have been derelict and have no accountable party for cleaning them up. There was a legislative void in the state of Oklahoma to do this, create this function, and so the industry stepped in and said we would like to do it. And in doing so, we voluntarily mandate that money to go into that fund. And this is administered by the 21-member board.

Secondly, the fund administers a public education program consisting of an advertising program to point out what the industry is doing, how important the industry is to the state, and to establish a school curriculum program that teaches energy science in the state schools.

In the calendar year of 1995, the Oklahoma Energy Resources Board collected $1.7 million in the assessed fund. The refunded amount that year was less than $90,000 or less than five percent of the total amount assessed. Even though $1.7 million sounds like a lot of money, the task that we have undertaken is monumental.

With the help of the Department of Energy, we were also able to secure a $200,000 grant which helped the fund accomplish some pretty amazing things during its first year.

In the very first year of our existence, we were able to assess, evaluate and clean up 71 abandoned sites, with 30 sites near completion by the end of the year of 1995. We are very proud of this effort and it has created a tremendous impression in the state, especially with regard to the press and the media throughout the state. We have had probably over $850,000 worth of press media given to us in a positive nature because of the efforts we have been making.

The problem we had with these sites is that years ago, in the early 1930's, the industry did a lot of things that we certainly would not do today and regulations today prevent us from doing, but they were not done maliciously, they were done out of ignorance. Today, by taking on the restoration of these sites, we are able to correct those problems and to point out to the public that we are not uncaring as an industry, that we do care about the state of Oklahoma, we do care about the health and the environment.

The Oklahoma Energy Resources Board is a good example of a public/private partnering in the fact that we have privatized—as a public agency, we have privatized all of the agency's functions. We have subcontracted with an environmental company to do the cleanup, we have subcontracted with an advertising firm to do public education and school curriculum, and we have subcontracted even the administrative function.

The Oklahoma Energy Resources Board has no public employees. I am the only—as an appointed member, I am the only official member of the agency itself.

In 1996, we hope to introduce legislation that will include natural gas in this function. We expect to reduce the assessment from two cents a barrel to one-tenth of one percent, and include natural gas. This will bring in $4.6 million, of which we hope less than $600,000 is refunded.

In addition, we would like the U.S. Congress to look at IPAA's efforts to use the OERB as a model for a national program assessing a similar amount.

If we are to survive as an industry, we need the support of the public. The only way we are going to gain the support of the public is to seek that support ourselves. And this type of a program is an effort to do that, and I encourage Congress to help us do just that.

Thank you very much.

[The statement of Mr. Brown may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Brown.

Next, Mr. Fisher.

STATEMENT OF DR. WILLIAM L. FISHER, DEPARTMENT OF GEOLOGIC SCIENCES, UNIVERSITY OF TEXAS AT AUSTIN

Mr. FISHER. Mr. Chairman and members, I appreciate the opportunity of being with you and sharing with you some of my observations on oil and gas production in the U.S. and its resource base.

One of the most dramatic things that has happened in the last decade as it concerns domestic oil and gas has been the drastic change in perception of the resource base. If you go back 20 years ago, we were working under a concept of scarcity, particularly in natural gas and also in oil, and a lot of our policy was dictated in that direction.

Today, our estimates of the amount of remaining oil and gas that are to be developed or could be developed in the United States are nearly an order of magnitude greater than they were just 20 years ago. We are looking at estimates of oil in the range of 150 to 200 billion barrels, which is equivalent to about a 50 to 60 year supply at the current rates of production, something on the order of 1600 trillion cubic feet of natural gas, equivalent to an 80 year supply at current levels of production.

We also see these resources substantially accessible at lower cost than we imagined just 20 years ago. And the reason for this quite frankly is what we have seen in the face of lower prices for oil and natural gas is a very rigorous application of technology. There has been a substantial substitution of technology for price. If one looks at the ability of producers to bring forth oil and natural gas, that is about almost three times better than it was just in the early 1980's; that is, the amount of oil and gas per oil or gas well drilled. And this has been very, very substantial, it has been an application of technology to offset lower prices.

The situations in the country as it regards oil and gas though are different. In the case of natural gas, that is generally a quite positive situation that we see now. The supplies have exceeded or met demand for the last ten years. Most of the projections that we see for natural gas call for increased supplies available consistent with the resource base and at only modestly increasing real prices over the long-term. And that is a very significant situation. There are—it is not to say there are not problems and some unevenness in the natural gas area, but it is by and large a very positive one.

For oil, the situation is a bit different, and there we have seen declines now for almost a quarter of a century except for a couple of years when that has been reversed. We do have the opportunity, in my judgment, to stabilize oil production and probably do it without a particularly heroic activity, but we need to appreciate a couple of things that do tend to work against us.

The resource base, as I mentioned, for oil is very robust, but it is nonetheless only about half of what it is for natural gas, in terms of our estimates, and that tends to favor natural gas as an exploration target. The yield per effort, which is really quite substantial in both oil and natural gas, but in the case of oil, it is only about a third, if you look on a BTU basis, as it is for natural gas, and although the price of oil is a bit higher than it is for natural gas, that is not enough to offset. That is another thing that gives a relative favorite toward natural gas over oil.

Another aspect that is very important in the oil situation is price instability or the perception of instability. Gas prices in fact are volatile and they do change, but they are subject to the kinds of forces that exist in this country, where oil, as you know, is under a very loose and very diverse cartel. It has crashed in the past more than once, the anticipation that it might do it again leads to a discounting that leads to less drilling of oil prospects than might have been the case otherwise. My own judgment is if the average price of about $18.00 that we have seen in recent years, if that were a certain price in the minds of producers, that would probably lead to 30, perhaps 40 percent more drilling, simply because of that. So there is a discounting on that instability and that is a factor that works against, differentially, to oil than it does to gas.

Also in oil, we have a serious problem in access. Some of our greatest exploration potentials for oil are on Federal lands or in the Arctic including the ANWR and other areas that are closed to exploration. And so the opportunities for fairly large economies of scale production from large, potentially large oil deposits are being denied. So the issue of access, I think, applies inordinately to oil a little bit more so than it does to gas—it does impact gas.

And of course, oil faces very low cost imports and that is a deterrent in terms of domestic production.

Still, the bright light is that there are a number of companies that can profitably pursue oil production in this country, and have done so. Those are companies generally that are not so large that they have big overhead, but they have critical mass of people and resources that allow them to acquire the technologies that exist today, and to utilize them internally. There are a number of those companies and they have done quite well, they are geared to the increment of the resource base. There will be more of those in the future and that holds some promise I think in terms of the overall stabilization of oil production in the country.

But the principal policy actions that the Congress needs to consider is this business of access. I cannot under-emphasize that, that is a tough one to fight, but it is one that has to be looked at. Incentives, particularly incentives that would allow us to keep pursuing, keep growing this vigorous application of technology, something like the immediate deductibility of geophysical expenses to spur more 3-D type use. We have vigorously applied research and development in the last few years, but I am not sure we are making the kinds of long-term investments, those need to be looked at, both public and private. And finally, we could look at a much greater measure of regulatory balance. Those things, not Herculean in any real sense, are the kinds of things that could give the right kind

of stimulus to bring oil in the same capacity and outlook that we see for natural gas.

Thank you, sir.

[The statement of Dr. Fisher may be found at end of hearing.]

Mr. CALVERT. Thank you, Doctor, that was very interesting.

Mr. LeMay.

STATEMENT OF WILLIAM LEMAY, DIRECTOR, NEW MEXICO OIL CONSERVATION DIVISION, STATE OF NEW MEXICO DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES

Mr. LEMAY. Good afternoon, Mr. Chairman, my name is Bill LeMay, Director of the Oil Conservation Division in New Mexico. I have had 40 years experience in this business, only nine of which has been as a state regulatory. I have been a consultant, independent geologist for 25 years. So I have had some perspective on the industry which I would like to share with you gentlemen this afternoon.

I think you have heard about the plight of our industry, the fact that we have gone from 4000 active drilling rigs down to 700, lost a quarter of a million people. The tragedy in our industry is well documented. We have seen the trend that is continuing, the majors are downsizing, they are selling off their marginal properties, they are forming partnerships to reduce operating costs and be more efficient. I think the independents are struggling just to survive in most cases, just to stay in business. I think any fat that was part of our industry at one time is long since gone and we are starting now to cut into some muscle.

Rather than dwell on the negatives, however, I would like to just address some of my remaining comments here to some of the positive courses of action that I think we can, as a country, take. Specifically, if I told you that we had a product here that was a win-win situation that would lower our deficit, our interest payments overseas, that was clean, efficient, cheap, reliable, a real benefit to our national defense, I think we would all rally around that and say we need to promote this product to its extreme—that is natural gas. Why we have not still bothers me. I do not know. It is a domestic product and it should be replacing foreign oil, especially the refined product natural gas, in our transportation sector. As you know, we are importing over 50 percent of our oil needs right now. And that is a killer as far as balance of payments go.

I also think that our answer lies possibly in an energy policy. Everyone has an energy policy, but not one that we could rally around and form a consensus among ourselves on. I think that policy should:

1. Produce a fair tax code that does encourage domestic exploration and development and extends the life of stripper wells. When in our country, the average well is making 12 barrels a day and the average Saudi well 5000 or 8000 in Iran, there is a problem there. We are not the same type of producing country. Ours is a very mature oil province.

2. Encourage research into economical ways to extract higher percentages of that oil in place. I know we have got research going on out there. Many of the polymers I have seen are successful, but

you have got to look at the cost factor and that is, are there present economical ways to extract higher percentages of oil, especially when we have had an oil price that has been under $20.00 for some time.

3. Let us substitute clean burning, domestically produced natural gas for gasoline refined from foreign crude.

4. Let us make available for drilling potentially productive Federal acreage while ensuring the protection of the environment.

5. Let us produce a regulatory climate that is efficient, consistent, predictable, fair and reasonable and still protect human health and the environment.

This fifth point I think I need to dwell on a little bit more. You know, we can streamline government and make it more efficient. We can start by changing the regulatory approach from one of command and control and one size fits all to regulatory programs that emphasize results over procedures and cooperation over confrontation. The role of the regulator should change to one who educates the industry and the public on pollution prevention and who is committed to utilize the scarce available resources that we have by working with industry and working with the public to direct those scarce resources to the greatest good. We need to get the biggest bang for the buck and that does not include the expensive litigation that results from some of our current policies.

We can eliminate duplication in our regulatory policy. There is no reason for the Bureau of Land Management to be regulating oil and gas drilling and production when the states have been doing this for over 60 years, and I might add, successfully. Why has a parallel bureaucracy been created to copy and duplicate the regulatory procedures that we have employed for years just because of different landownerships? We are experts and should regulate the exploration and production activities on state, on fee and on Federal lands. We must leave the surface use, the controversial issues, surface use management issues to their respective Federal agencies. The state has no business saying when or how a well should be drilled. In other words, the decision to drill a well must be left up to the Federal agency, that is the Federal trust. State oil and gas conservation rules, however, have been enacted and do work. They prevent waste, they protect correlative rights of all interest owners and they do protect human health and the environment. We need to eliminate a parallel process of regulation. It is costly, inefficient, wasteful and cumbersome to comply with at best. At worst, it produces confusion, delay, results in wells not being drilled and results in premature abandonment, at times, of producing wells. Now the states have always been the leaders and have been the architects of conservation. I think it is time now to eliminate the duplication of regulation in the oil patch.

Thank you very much.

[The statement of Mr. LeMay may be found at end of hearing.]

Mr. CALVERT. Thank you. That is exactly what we are trying to do with our royalty fairness legislation.

Mr. Brown, I just from your testimony want to congratulate you on what you are doing in Oklahoma and it seems from what you are doing, it is not incompatible to protect the environment and drill for oil, and in fact fix past problems from days in which we

were not as careful in the production of oil here in the lower 48. So we need to take what you did in Oklahoma to California and elsewhere in the country and educate the American public that that is not incompatible and that the environment and production of oil and energy in this country is the right thing to do. So thank you.

Dr. Fisher, very interesting testimony and the access question is an extremely important one. We, as you know, have debated ANWR as part of the budget reconciliation debate. Some believe that the last large oil find in the North American continent is in ANWR, we do not know how much oil is there, I have heard all kinds of estimates, I have been there a couple of times, but we believe it to be significant. And unfortunately we cannot get access into that area, even though the state of Alaska, the Native Americans, many other people here want to get that access.

What kind of impact would occur, in your mind—as you know, production in the north slope is down now to 1,300,000 barrels a day from a peak of about 2 million barrels during—I do not know, five, six years ago. And under our agreement, we must remove the pipeline that goes down to Valdez once production gets to a point where it is not profitable to move oil down into that pipeline. And that pipeline I believe cost approximately $7 billion to build. And if we do not get additional production on the line soon, all that will be pulled out, and as you also know, Alaska accounts for 25 percent of domestic production.

How important do you think it is to get into ANWR and find out first, if there is any oil down there?

Mr. FISHER. Well, that is the essential question. We will debate a long time on how much is there until we actually drill it. The potential though in ANWR I think is substantial. And as you point out, the ancillary activity that has gone on with it, there are a lot of marginal fields in and around Prudhoe Bay and in and around potentially where the ANWR development may occur that probably will not come on in streams in and of themselves, but the addition of the kind of potential that we think exists at ANWR would be enough to pull those into the pipe too. So, it has the prospect, in my own judgment, of probably being able to sustain upwards of a million barrels a day worth of production. If you look at what ANWR might do and what some of the marginal fields that would be aided by that. And out of a national production of 6.5 million barrels a day, that is a very significant increment. So ANWR is not the whole picture by any means, but it is a very important one in terms of the oil side.

Mr. CALVERT. Doctor, I have an API booklet here with some quotes from the past about United States likely running out of oil reserves and some interesting quotes in here. As a lifelong geologist, how do you feel about our domestic reserves picture today? You mentioned that a little bit in your oral testimony, but do you believe that if we can get access to this oil, this production, we can——

Mr. FISHER. Sure, access is one, in terms of some of our new field production potential. Research and technology in terms of improved recovery. A very large part of our resource base on oil we already know where it exists and it exists in existing fields and a lot of the

additions that are coming now are in fact coming from those fields. So the combination of both technologies and access are the kinds of things that really bring it forward.

And again, there are probably some structural things as well. We have a robust oil resource base in this country, as I said 150 to perhaps 200 billion, depending on what kind of price assumptions you want to make. But the increment at which it exists and which it can be developed, with the exception of a few places like potentially ANWR, is relatively modest and that means the reliance is very, very heavily on efficiency. And there are a number of prototype companies I would say in that regard that are making those kinds of activities and if we can enlarge that crowd, I think we have a chance to really extend the base. The base itself is quite large, it is a question of how well we can get it developed and how efficiently we can do it.

Mr. CALVERT. Thank you.

Mr. FISHER. We are not running out, not in any sense of the measure.

Mr. CALVERT. Ms. Jackson Lee.

Ms. JACKSON LEE. Thank you very much. And certainly to Chairman Rylander, I hope that she will get un-iced and we are glad, however, David that you were able to come.

I note that in her testimony, she noted some efforts toward decreasing the regulatory burden, if you will. And I know that you all deal with the smaller producer, and we hopefully at this hearing will find a common chord between our larger majors and of course the smaller industry. But I note that you suggest reduced paperwork and elimination of meaningless production limitations, reduced tests on wells.

Knowing our commitment to the environment as well—and safety I think is a concern in the responsibilities of the Railroad Commission—none of that, as you understand it would have a negative impact on those issues, or has had? You have probably already implemented some of that.

Mr. BESHEAR. Thank you, Representative.

We believe—the Chairman believes that these are bureaucracy changes, if you will, that can be implemented without any impact on public safety, without any impact on wellhead safety, safety for those working around the wellhead, for this exact proposal, and believe that overall it is a positive thing.

As several other speakers have noted today, it is a changing time. Many of these regulations were done at a time when the whole Texas oil and gas scene was different, and now we are dealing with stripper wells, we are dealing with marginal wells. So I think you are correct.

Ms. JACKSON LEE. In the course of time, you have implemented some of these. Do you have one in particular that you might give me an example of, or would you like to——

Mr. BESHEAR. Yes, ma'am. For instance, there were some injection gas well reports that operators were required to file, duplicate reports for these injection wells. The Commission has eliminated that, which eliminates roughly 53,000 duplicate reporting requirements. On pre–1963 injection wells, operators were required to file a $100 fee to change that injection well pressures that could have

been done administratively and the Commission has changed that, roughly a savings of $480,000 to small oil and gas operators who no longer have to pay a $100 fee. And for the marginal operator, if you have 10 wells and a $100 fee, that is a significant amount of money.

Ms. JACKSON LEE. So you have actually gone through and tried to enhance the opportunities for these small businesses, who happen to be in the energy business in particular.

I note also in her testimony that you are doing some incentives for the second and tertiary recovery process and you suggest that 50 billion will be added to the economy. Again, those are uniquely small producers in many instances.

Mr. BESHEAR. That is correct.

Ms. JACKSON LEE. Do you all have any numbers or cross-pollinate with the Texas Employment Commission to know how that would translate as it relates to jobs?

Mr. BESHEAR. No, we do not have those figures, but I can get them for you.

Ms. JACKSON LEE. I would appreciate it.

Mr. BESHEAR. Yes, ma'am.

Ms. JACKSON LEE. Thank you very much for being here.

Chairman Brown, likewise you have made some very vital points in your testimony, commenting that it is not in conflict to be concerned about the environment and also see an active domestic energy industry thrive.

One of the points that I have heard by industry loyalists is that the industry is not monolithic. When you begin to try to design a policy on a national level, you obviously have oil and gas, you have majors and then you have your smaller producers. I note that you are in the latter category.

Can you help me as you have looked at Oklahoma, how we would be effective—and obviously I would not expect for you to design the policy for us—but how we would be effective in responding in a balanced manner between some of the tensions between our smaller producers and our majors?

Mr. BROWN. Well, Oklahoma Energy Resources Board consists of major oil companies and independents working together and I have been very pleased to say this is one common ground. We have a lot in common—industry image, for instance, is common to all of us. And when we go out and work together on environmental projects like this, it brings the industry a little closer together.

In seeking a national agenda in this same arena, we have been able to get consensus with the many number of major oil companies and are currently seeking consensus of everyone. If IPAA and Mid-Continent and API come together and bring a legislative agenda to Congress sometime this year, it is going to be because we have a consensus among ourselves. And this type of program works well in that regard. Obviously in other areas, independents are going to differ with majors on their legislative agenda, simply because we deal in different products. Independent producers sell their product at the wellhead and they are subject to market price. Major oil companies tend to buy that product and they are under pressure to keep their price as low as possible, in order to keep their product, which ultimately ends up as gasoline or fuel oil or

whatever it might be, as low as possible to the consumer. And we are the same way as independents. We do not want extremely high prices because it does not do us any good. We want the consumer to be happy and buy our product just like majors do.

And so we get along pretty well in most arenas, but this was one arena we really worked well on.

Ms. JACKSON LEE. Well, I am glad to hear that, and I would happen to be one of those who would tend to think that there are more grounds of commonality. I am certainly glad to hear your cooperative mode in Oklahoma, and I imagine we likewise here in Texas are moving in that direction, and I would think that the environment is a place for cooperation because however those regulatory processes are looked at, I think we all have a common goal there too, to be cooperative with that process. And then I hear a theme of reduction of paperwork would be helpful to all, as long as it is generating the kind of balanced market price that all need to survive.

My last point, as the light is on—have you seen or have you talked about increased employment through your resource board as you have discussed these other issues about the energy industry in Oklahoma, have you looked at employment growth in any way?

Mr. BROWN. In the industry itself?

Ms. JACKSON LEE. Yes, and particularly in your state.

Mr. BROWN. Actually no, the Energy Resources Board's focus right now is simply on environmental cleanup and public education. Possibly sometime in the future we may undertake issues of that nature, but we have not done so as of recent years.

Ms. JACKSON LEE. Thank you. Thank you, Mr. Chairman.

Mr. CALVERT. Thank you.

Mr. Green, any questions?

Mr. GREEN. Mr. Chairman, just a couple.

Mr. Brown, I like your idea about what is happening in Oklahoma on the national oil and gas education and environmental restoration checkoff program, I think that is a good idea. Do you know any Member of Congress from Oklahoma that is working on that?

Mr. BROWN. Of course, we have not asked Congress to write any legislation as of yet, but it is heavily supported by the Congressional Members of Congress. I know Congressman Largent recently at the Wildcatters Week sponsored by IPAA, I believe in September of 1995, discussed it at a press conference at length, and is quite impressed with the program. He is also helping us with a safety video that we are creating to put out in public schools, to help kids stay away from oil and gas facilities. We have had some deaths occur in Oklahoma as a result of that. And the overall consensus of our Congressmen and both Senators is that this would be a great program and they are solidly behind it.

Mr. GREEN. I have found in Congress we have a lot of commonality between Texas and Louisiana and Oklahoma and I think we could easily work together. I did notice though in your statement at the top of page 5 where you talked about the number of agencies, using as an example in Oklahoma City that you would have to deal with and that, thank goodness, you do not have to deal with the U.S. Coast Guard. If Oklahoma has to deal with the U.S. Coast Guard, your friends to the south might not be around.

But also, the Texas Department of Natural Resources—in some of our best laid plans, I was in the legislature in the Senate when—I guess it would be the Oklahoma Department of Environmental Quality and Oklahoma Water Resources would have been merged into TNRC or, as they say, train wreck as I have heard it referred to since it was created. It was an effort to try and have one location for industry and everyone to go to, but hopefully it will no longer have the name of Texas train wreck, because it is a consolidation of agencies.

Thank you, Mr. Chairman.

Mr. CALVERT. Thank you, Mr. Green.

Before I go to Mr. Bentsen, I would like to recognize Commissioner Burguieres, who just arrived, and we have almost lost him. You drove through all that ice and we almost lost you off the stage.

I would like to go ahead and recognize you for your statement if you would like.

STATEMENT OF ERNEST A. BURGUIERES, III, COMMISSIONER OF CONSERVATION AND ASSISTANT SECRETARY, STATE OF LOUISIANA DEPARTMENT OF NATURAL RESOURCES

Mr. BURGUIERES. Sure. Thank you very much.

My name is Ernest Burguieres, I am the Commissioner of Conservation for the state of Louisiana and as such, I am the chief regulator for all oil and gas activities in the state. I believe, unlike most other states, Louisiana focuses a tremendous amount of power in one office and in one person in my office. I do not have any involvement with royalty or anything like that, I just regulate oil, gas injection mines and coal mining.

I have submitted a prepared statement that I think you all have received, but if you would indulge me, I would prefer to make some comments on what I think is probably of better interest to the industries in my state, and that is the overlapping authorities between Federal and state regulators.

Two of the biggest problems that my agency faces is problems with EPA and Coast Guard in dealing with the oil companies, because I end up in many cases running interference and trying to keep the Federal agencies at bay from over-reacting to situations because they come in with a sledgehammer and it is oftentimes not productive. At this point, I think I have worked out an arrangement with EPA Region VI out of Dallas on a particular situation that, if it comes to pass like I think it will in the next few weeks, should be a model for future relationships with Federal agencies. Because in my opinion, what the Federal agency brings is dollars and in many cases, like the Coast Guard, resources in the way of manpower, boats, things like that. What they do not bring is knowledge of a particular local problem and how to deal with it. And because they are not from the area, they have a specific set of rules and they tend to just take a sledgehammer approach to things.

We are involved in a situation right now where we have a mature oilfield in which EPA was called into it and left to their own devices, EPA was going to spend $6 million to $7 million. We worked out an arrangement with several private companies, the landowners and EPA where another company will come in and

take over the site that has problems and clean it all up and then reproduce the field. This I think is an emerging area for smaller companies to take mature fields, clean them up of their environmental problems and start producing wells that, although they are mature, they still have a lot of useful life left in them.

My biggest dilemma is in getting high enough up the Federal hierarchy in working out informal arrangements with these Federal regulators so that if they will just give me a chance with a situation that is not an emergency that can be handled in a timely manner, let me have first crack at it so that I can try to work things out through persuasion rather than issuing just compliance orders and things like that.

And if you have any questions, I will be glad to answer questions. I am sorry I am late.

[The statement of Mr. Burguieres may be found at end of hearing.]

Mr. CALVERT. Thank you, thank you for coming.

Mr. Bentsen.

Mr. BENTSEN. Thank you, Mr. Chairman.

Mr. Brown and—usually in Washington, I am able to say, since I am from Texas I can pronounce names any way I want to but since I am back in Texas I have to be careful about that, but in Washington right now, we are struggling over the issue of Superfund and how to come up with a scheme basically in order to move the program forward from 1981, actually get out of the courtroom and into the process of cleaning up. And I would just say that although you are working on a slightly different program in Oklahoma and it sounds like what you are trying to do in Louisiana as well, you have at least been able to achieve a pretty balanced scheme where you are able to do this. I would hope that we might be able to do that as well. And I disagree with the administration on this, that at some point we are going to have to say we cannot go back in liability because we cannot determine liability and we are going to waste a lot of time and money in the process of doing it, and it is going to take an industrywide agreement, including the insurance industry, to get there. That may be harder to do than it sounds, but I think that is what we need to do. I commend you on what you have done.

Dr. Fisher, let me ask you—and I read your testimony on the plane coming down this morning, and going back to my questions earlier, and I am really just trying to understand here, I do not want to get in the middle of the ANWR fight, there is a lot of blood that is going to be spilled over that, I imagine in Congress. But reserves—you talk about reserves and where they are, based upon 1980's technology versus 2010 technology projections there. And also in terms of price, it seems to me that reserve is a function of price and technology, and price is a function of supply and demand. And I guess my question comes back again, if we—let me take it forward—are we at a point now where existing reserves—well, existing exploration that is going on, is that insufficient to meet demand? Is that the only issue or is that the main issue which is driving the decline in domestic production or rather would it be, if we open up a great deal more reserves, do we risk the inverse reac-

tion of increasing supplies too much, thus driving down price and therefore curtailing the effect of what we wanted to have?

Mr. FISHER. Sure. In the case of oil, of course, demand is being met, it is being met increasingly by foreign imports. The whole judgment as to whether that is good, bad or otherwise, it does not really have any impact on what the reserve status would be in the U.S. in terms of the impact on price because that price is controlled to at least a certain extent by global demand and the ability of the OPEC to balance supply and demand. To a certain extent, prices can be, as we have done historically in Texas with market demand prorationing to stabilize price. That can be done by the OPEC, but the demand is being met and the issue there is whether it ought to be met increasingly from domestic production or decreasingly so, I think is the way I should put it, as opposed to imports, is really a matter of policy, economic policy, that is broader, in my judgment, than just the issue of oil prices. I do not think it would have any effect upon demand in that regard, unless the price were higher, substantially higher.

Mr. BENTSEN. Well, I guess—is there excess supply within our current domestic production capabilities?

Mr. FISHER. In the case of oil?

Mr. BENTSEN. Right.

Mr. FISHER. No. No, all the oil that can be produced is needed.

Mr. BENTSEN. So imports are more a function of demand than a function of price that oil can be produced more cheaply——

Mr. FISHER. Sure, because our demand is about twice what our ability to produce is. So the more we produce domestically, the less we would probably import. There would be a premium obviously on domestic production than on imports in any sense. So if we could, by some measure, produce a million barrels or more additional oil tomorrow, it would be immediately absorbed as a part of demand, and back out that much——

Mr. BENTSEN. Even with a slight price differential.

Mr. FISHER. Even with a slight price differential, yes.

Mr. BENTSEN. Thank you. Thank you, Mr. Chairman.

Mr. CALVERT. Thank you.

One last question for Commissioner LeMay. I have heard that one of our brighter onshore prospects for oil discoveries is the Delaware Basin in the southeastern part of New Mexico, except that there is a conflict between some companies leasing Federal land that is valuable for potash minerals for oil companies that need to drill through that potash. Is there a solution to this problem? Is New Mexico attempting to get the conflicting parties together and work out some kind of an answer to that problem?

Mr. LEMAY. Mr. Chairman, you are correct in assessing the problem. As far as what this resource is, it is 4000 feet of Delaware sand that historically has been drilled through and not looked at very closely, they produce the very top of it. Subsequent developments showed that there are lots of oilfields within that 4000 foot section, so what was once accepted by the oil companies as basically almost throw-away acreage, they were not fighting hard to gain access to those areas where the potash companies claimed to have proved reserves. Once these discoveries were made, there is

a multi-million dollar potential in drilling these areas that are off limits to them basically.

I have had many hearings, I also serve as Chairman of the Oil Conservation Commission. We have had weeks and weeks of testimony, I know this issue has gone to Washington at the very highest circles.

There are some scientific things that need to be done to see if oil wells can be drilled safely and produce safely without injuring miners or without having gas enter the mines, if and when that land is developed for potash reserves. I think right now there is an IBLA appeal in Albuquerque that is going to be heard in March. This is a continuing process. There is really quite a bit at stake. I do think that a compromise will ultimately be reached where wells will be drilled, potash will be mined and both resources hopefully will be developed.

Mr. CALVERT. One thing that came to mind, Mr. LeMay and Mr. Burguieres would probably want to answer this also, in our royalty fairness legislation, we are trying to forge a new relationship with the states, as you are aware, as we eliminate the duplicative regulations and efforts that are performed both by you and the Federal Government. How can we provide assurances to the industry that the states will consistently enforce Federal lease terms and provide benefits by performing activities more efficiently? As you know, we hear from some in the industry that it is going to be the balkanization of royalty collection and there is some fear about having one set of rules and regulations in Texas and another set of rules and regulations in Louisiana or New Mexico.

Would you like to comment on that?

Mr. BURGUIERES. Well, the royalty end of the thing, it does not affect Louisiana say as much as New Mexico or the western states. It was always our position that whoever did it, there ought to be just one entity collecting the royalties, to make it easier. From an enforcement perspective, what I—on the ILGCC, I think we have pointed out that in Louisiana and I think possibly New Mexico as well, we have right now an underground injection control program that we work and we have primacy over the Federal Government, but the Federal Government approves what we do and they monitor how we do it. And so we already have in place a system where we are enforcing regulations that the Federal Government likes, they want and we are doing it to their satisfaction. We are also doing it with—we have two strip coal, lignite mines in Louisiana that we also deal with the Office of Surface Mining. Those are two instances where in many other states the Federal Government does those functions but in Louisiana we take primacy and we do it for the Federal Government and I think we have done it quite satisfactorily. So when I hear people say the states cannot do this, I can just point to my own programs to show that we have done it and they have been approved.

Mr. CALVERT. Thank you.

Mr. LEMAY. Let me comment, Mr. Chairman, just briefly on that. I think the feds can still enforce their lease terms. It is like anyone owning the lease, it is a contract between the Federal Government and whoever has the lease. The duplication in regulation issue is

one that—we have been there for 60 years and I think it is ridiculous just to have a parallel system.

The fact that royalty collections—and there really are two big states, Wyoming and New Mexico, that is 74 percent of the royalty collections, the fear that there would be a different system in place or you would have to deal with 50 different systems, I think is not true. If you are drilling a well and reporting royalty, you are reporting it to the state already, and by adding Federal royalty to that, I do not think would be a burden on industry. I cannot imagine that anything the states would do would be—I think there is a reluctance to adopt something new because they are used to the Federal Government and dealing with the Federal Government. But that does not mean that the states could not do a better job of it.

Mr. CALVERT. I agree with you. I think there is just a certain level of comfort there.

Thank you very much for your testimony and we appreciate your braving the weather to come today. We will introduce our next panel. Thank you very much.

Our next panel today are industry representatives. First, Richard D. Kinder, President and Chief Operating Officer of Enron Corporation; Ernest H. Cockrell, President, Cockrell Oil Corporation; Joe Foster, Chief Executive Officer of Newfield Exploration Company; and the Honorable Robert A. Mosbacher, Chairman, Mosbacher Energy Company. If you would like to come up, thank you all for coming out today. I saw Mr. Mosbacher earlier, he was here a minute ago, so he will be back in a minute.

We will go ahead and start the testimony. Is it Mr. Kinder or Mr. Kinder [pronouncing]?

Mr. KINDER. It is Kinder [pronouncing].

Mr. CALVERT. Kinder, OK, sir. Thank you, Mr. Kinder. If you would like to go ahead and start your testimony.

STATEMENT OF RICHARD D. KINDER, PRESIDENT AND CHIEF OPERATING OFFICER, ENRON CORPORATION

Mr. KINDER. Yes, I would. Thank you very much, Representative Calvert.

My presentation will deal with Houston-based Enron Corp.'s growing activity in the international energy market and the slides that I submitted indicate some of the opportunities that exist there. And then I want to close by addressing some provisions in our government here in the United States in the relationship between the government and the upstream part of our business that we think need to be examined very closely. And in some areas we are making real progress and in some we think we are not.

Let me just say first of all, spend a minute or two sketching how Enron has evolved from a North American natural gas company to an international energy company. I think this is pretty important because we represent a growing trend I think among a number of energy companies located both here in Texas and elsewhere in the United States.

I think of interest to this Subcommittee is that we remain the majority owner of a sizable independent exploration and production company, Enron Oil & Gas, we own 60 percent of that entity. EOG

produces about 750 million cubic feet a day of gas and over 20,000 barrels of oil a day. And most of our production and reserves is natural gas and most of it is located in North America.

Internationally, as we describe in the handout, there is a huge need for energy infrastructure we believe, particularly in developing regions of the world. It centers around electric generation and around the need for natural gas or liquefied natural gas to serve that need for electric infrastructure. We now have actual or planned operations in 30 countries around the world and roughly 20 percent of our overall operating income comes from international sources. Ten years ago, that was two or three percent.

The reason that I think that is very important in the energy business for consideration by this subcommittee and others is that this does not mean that companies like Enron are leaving North America. It simply means that there are enormous opportunities for American companies overseas.

By way of example in this one area of energy infrastructure, about 50 to 70 percent of all the money we spend on these projects around the world is U.S.-based infrastructure equipment. For example, in the last two years, we have spent about $1.8 billion with companies like G.E., Westinghouse, Bechtel, to supply the needs to get these plants up and operating. And that is both electric plants and pipelines that serve these plants.

So I think there is a tremendous need for international infrastructure development, particularly in the developing world. U.S. companies are ahead of most of the competition, and there is a lot of competition out there, and they are using U.S.-sourced equipment to a large extent.

What would be of great help to us on this international area would obviously be to continue support for export finance backed by U.S. EXIM, OPIC so that Enron and companies like it can borrow at market equivalent rates. To the extent that we do not do this in the United States, Mr. Chairman, it is going to be done by other countries. The Japanese EXIM Bank, the Italians, are very, very interested in providing this financing and to the extent they do so, today you can buy General Electric or Westinghouse equipment from any of these foreign sources because those foreign companies are licensed to produce G.E. or Westinghouse equipment.

So this is an area that is very important to us and one that I think is often overlooked when you talk about the energy patch and what will help create more U.S. jobs.

Turning to where some of those opportunities are, tremendous opportunities in the developing nations. In South America; probably the biggest need for electric infrastructure is in Asia, we are estimating that over the next 10 to 15 years two countries there, China and India alone, will require about 370 gigawatts of new electric generating capacity. To calibrate that for you, that is about half of all of the U.S. electric generating capacity presently in existence. So these are huge opportunities for American companies. It is a way for all of us to grow and again, it is a way to provide jobs and capital here in the United States, where most of the components are manufactured.

Let me turn, just in conclusion to the U.S. Our belief is that to ensure a continued healthy U.S. domestic investment in the up-

stream part of the business, there are two or three things that have been in the spotlight that need to be done. One, of course, is something that is near and dear to your heart, I think, and that is the royalty fairness bill. We applaud that, we think it provides certainty and finality and fairness to Federal royalty payments and we applaud everything you are doing and believe that is working its way toward passage.

Let me turn next to certain aspects of the MMS's proposed gas valuation regulations, which we think need to be looked at very carefully. As you know, some of these proposed amendments seem to us to reflect a policy of valuing natural gas for royalty purposes after certain downstream things or services are added. For example, sweetening, treating, dehydration, compressing, even in some cases aggregation and other value-added services, may actually be included in the royalty value, particularly when companies like Enron and many others have affiliates that do all of those things. So to the extent you have a relationship between the upstream and downstream, it is very difficult to break that apart, and we would submit that this needs to be clarified and we think it will.

And then finally, of course, as you know, a third issue which could negatively impact domestic U.S. drilling and certainly pipeline construction, a potential shortage of special steel products. Trade measures that have tried to prevent anti-dumping I think have inadvertently forced us to have a high-cost foreign supply option, and we would urge that the Department of Commerce—that there be a procedure where you could petition the Department of Commerce for a tariff waiver if the product is unavailable in the United States.

So in conclusion, as our business has become more global, I think all of us will be continually evaluating both domestic and international opportunities. I think we will look at relative tax and regulatory burdens as part of making that decision.

So thank you very much, Mr. Chairman.

[The statement of Mr. Kinder may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Kinder.

Mr. Cockrell.

STATEMENT OF ERNEST H. COCKRELL, PRESIDENT, COCKRELL OIL CORPORATION

Mr. COCKRELL. Good afternoon. Thank you, Mr. Chairman. I am Ernie Cockrell, I am President and Chief Executive Officer of Cockrell Oil and Gas, L.P. I appreciate the opportunity to visit with the Committee this afternoon.

We are a private exploration and production company located here in Houston. Our focus is entirely on the Gulf of Mexico where we have been an active operator since 1970. We have approximately 40 employees, a reserve base of approximately 100 billion cubic feet equivalent of gas and we operate in the Gulf, 4000 barrels of oil per day and 158 million cubic feet of gas per day. That is not much to dent Houston, but we can light up Austin pretty good with that.

The assumption today is that domestic oil and gas reserves and production are in a decline, and whether that is true or not in the future depends largely on several factors that you have heard

today. That includes product pricing, tax burden, government regulation, accessibility of public lands, levels of consumption and of course technological advancement.

But regardless of what does happen, over the past 10 years, we have seen declines in both oil and gas reserves and production. Gas has been a little bit different from oil in that since 1988, the reserve position has flattened out, even though production has increased substantially in gas reserves.

History shows without question though that declining oil and gas reserves and production result in two things: loss of jobs and increased imports. Our imports, you have heard a whole lot about oil today. Gas we are importing more also. In 1988, we were importing less than a trillion cubic feet of gas from Canada. Today, we are importing almost three trillion cubic feet of gas from Canada, or about 12 percent of our supply. So it, without question, impacts significantly jobs and balance of payments.

So what can be done? The domestic industry must be kept strong, to exploit our existing reserve base and also to do the very things that Rich was talking about, to maintain our competitiveness and world dominance on the oil and gas scene.

There are things that need to be continued, and speaking from our company, we look at four things in the Gulf of Mexico that we need to have to operate. We need consistent leasing policies. The government is doing that, the MMS is having two leases a year in the Gulf of Mexico, we hope that continues. We have standard lease forms and royalties. And we hope that continues. Lastly, we need timely permitting of our activities, drilling wells, exploration plans, pipelines, platforms, et cetera. And probably most important, we hope that there is never a return to the non-free enterprise type of regulatory environment that we had in the United States in the 1960's, 1970's and 1980's. During the basic free market conditions in the United States both consumers and producers have been well served.

The 104th Congress has done some things that I applaud. The removal of the export ban on Alaskan crude oil is the commonsensical type of legislation that we need. The royalty abatement in deep water is something that I think is extremely attractive and will help companies such as ourselves move out into the deeper water and benefit the reserve picture and the production picture.

But there are many things that can be done, and I would like to focus on just two or three of those right now.

Without question, access to public lands is critical to maintaining domestic reserves. For a company that is involved in the offshore, that is particularly critical because there are vast areas of our continental shelf that are off limits to oil and gas exploration. I hope that policy is revisited.

An example on the environmental side, the EPA has proposed the expansion of the toxic release inventory under the Superfund Amendment and Reauthorization Act of 1986, to apply to exploration and production companies. That would create a reporting burden, both on the industry and on government that would be costly, and in my opinion unnecessary. I hope that type of thing does not move forward.

And lastly, the Oil Pollution Act of 1990. There is a compromise bill now in the House and Senate committees that hopefully would amend the 1990 law, but if left to stand as it is now, it would eliminate us as a producer in the offshore Gulf of Mexico because of the bonding requirements—not only us, but several other companies.

I appreciate the opportunity to be here today. I thank you for your time and I would be happy to answer questions when my turn comes up. Thank you very much.

[The statement of Mr. Cockrell may be found at end of hearing.]

Mr. CALVERT. Thank you very much.

Mr. Foster.

STATEMENT OF JOE FOSTER, CHIEF EXECUTIVE OFFICER, NEWFIELD EXPLORATION COMPANY

Mr. FOSTER. Thank you very much. I am Joe Foster, Chairman and Chief Executive Officer of Newfield Exploration Company, which is located here in Houston.

I remember testifying in 1977 on behalf of a previous employer concerning the massive natural gas shortages that took place as a result of the very severe winter in the northeast that year. It shut down schools, affected hospitals and left a number of homes without heat. There was a fear that we were running out of natural gas at that time, if you remember, and that led to the National Gas Policy Act of 1978.

Well, the fact is, we were drowning in a sea of regulation and today, this winter, we have seen at least as severe weather in the northeast and all over the country as we did in 1977 and I have not heard any complaints about gas shortages. This industry has performed very admirably in its less regulated form now and I am proud of what we have done in the natural gas industry.

The Gulf of Mexico, the outer continental shelf in the Gulf, has certainly been critical to this supply performance. About 25 percent of the U.S. natural gas comes from the Gulf of Mexico and it has the greatest flexibility in terms of being able to move the rate up in days or weekends like this, or down to match supply and demand, of any natural gas supply area in the country. And it is essential that activities which add new supply and producing capability in the Gulf be encouraged, not discouraged.

One of the reasons that the Gulf is still such a prolific producer after over 50 years of exploration and development in the shallow waters in the Gulf is the presence of independent operators. I am testifying here today as Chairman of the Offshore Committee of the Independent Petroleum Association of America and I will tell you that there are about as many definitions of independents as you can imagine. But if you define an independent as one who is almost exclusively a producer of oil and gas, who does not have refining operations, does not have affiliated gas pipeline operations, then using that definition, 23 percent of the Gulf of Mexico production comes from independent operators. And that compares with only 10 percent in 1986, the year that oil prices fell and this industry started shrinking.

My company, Newfield, is one of those independents. We started business about seven years ago and yet today, we are among the top 20 operators in the Gulf of Mexico. We operate about 240 mil-

lion cubic feet a day of gas production, 16,000 barrels a day of oil production. And to put that in perspective, we produce enough natural gas to supply about one million households with their average daily requirement for the year, and enough oil, which if converted to gasoline, would permit over 50,000 automobiles to fill up with gas, 14 gallons, every day. Other independents in the Gulf, I should say, produce even more.

We have only 63 employees on our payroll, but our total operating and capital expenditures during 1995 were over $120 million. We estimate that at any one time 800 to 1000 individuals are being employed on Newfield activity, not including the so-called multiplier effect.

My testimony today is that independent operators add value in the Gulf of Mexico and that their presence should be encouraged. Independents get oil and gas to market that would be too risky to explore for or too costly to develop and produce for the major oil companies. They bring a diversity of viewpoint that is essential in seeking out the treasures that Mother Nature hides so well.

Here are three things I think you should consider to encourage and strengthen the presence of independents in the Gulf: Ernie mentioned one of them.

1. Amend the Oil Pollution Act of 1990. That law, as written, would put Newfield—would make it impossible for Newfield to continue to operate in the Gulf. I know that there is legislation that has been passed on both sides of the Congress. I would just encourage you to do something. We need a legislative fix to the Oil Pollution Act of 1990.

2. Do not abandon areawide lease sales. Areawide lease sales permit the diversity of viewpoint that comes from having a lot of different independents working in the Gulf, and that gets translated into the drilling of wells. To the extent that lease offerings are rationed, or to the extent that acreage is otherwise held in big chunks past the primary term, that makes fewer opportunities for independents to drill. And as a result of that, consumers lose the opportunity for increased supplies and the taxpayers lose the benefits of potentially higher royalties. Make no mistake about it, oil and gas is found by drilling, and independents are, above all, drillers. Legislation and regulation should make it attractive to drill.

3. And finally, continue to look at incentives such as deepwater royalty relief, where the tradeoff for less government revenue per barrel is more domestic supply, fewer imports and more jobs. An example would be either a tax credit or immediate tax deductibility of geological and geophysical expenditures. Three-D geophysics has made this industry much more efficient and it is the foundation upon which Newfield's success has been realized. But it is a very expensive upfront cost. Incentives to utilize more 3-D would, in my judgment, result in more domestic oil and gas being found and certainly the expensing of 3-D geophysics should be considered on existing fields where a lot of oil and gas remains to be found.

So thank you very much for the opportunity.

[The statement of Mr. Foster may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Foster.

Is Mr. Mosbacher here? I saw him earlier.

[No response.]

Mr. CALVERT. OK. I have a question for all of you. It is something I have been thinking about, actually several people brought it up in the last several months. As you know, right now when we go to bid in the Gulf, we have a bonus bid process. Rather than having a bonus bid process, as we do now with the royalty, how about the idea of removing the cap on royalties and removing the bonus bid process? Just a reflection from the industry on how you would feel about something like that. We are trying to increase production, I know that some of these bonus bids are extraordinarily high, but on the other hand, I think we can look at the CBO estimates that we are going to look at and maybe we can generate more revenue as far as government is concerned, but at the same time broaden the entrance into the bidding process in the Gulf.

Any reflection from any of you?

Mr. FOSTER. Well, I would say first, that has been tried, I think it was tried in the late 1970's, early 1980's. Net profits bidding was also used. I think the conclusion from all that, both on the industry side of the fence as well as the Minerals Management Service, was that the system we have today works very well, it ain't broke, I would not mess with it.

Mr. COCKRELL. I would parrot that. The State of Louisiana uses a system that you bid both bonus and royalty, but you can also designate the size of the lease, so you have complete flexibility, and it is a system that has been used in Louisiana for years and years, people know how to use it, Conservation Commission knows how to regulate it.

In the offshore, consistency is paramount for us. We understand the leasing system and we all operate and compete within it and I would hope that we would stick with what we have.

Mr. CALVERT. Have you got any comment?

Mr. KINDER. I agree, I think it has been tried and I agree with what Joe said. I think the present system is working.

Mr. CALVERT. We have heard the finding costs in the U.S. are now lower than elsewhere and that our reserves can support the present rate of production or possibly a higher rate. In light of this, why is the exploration industry not spending more in the United States than they presently are? Why is the industry not out looking for more opportunities here domestically in the United States? I think I know the answer to that, but I would like to get it on the record.

Mr. KINDER. Well, there are several explanations for that. One is that, of course, over the past several years, particularly among majors, there has been a tendency to try to hit what we call the elephants, and most of those elephants are in less developed areas of the world, particularly a lot of offshore pretty hostile environment, and I think the impact of what has happened in the former Soviet Union and other parts of the world in terms of having—now providing access to western companies to go in, has certainly had some impact. That and, of course, the feeling that in many respects the U.S. onshore is a fairly mature place.

Beyond that, of course, as I said at the conclusion of my remarks, you know, I think companies certainly judge the regulatory bur-

dens, the tax burdens and I think some producers would say that that has played into their decision to go elsewhere other than the United States, with some of the incentives that are being offered in some of the other countries around the world.

So there is a myriad of reasons. That said, there is still an awful lot of capital being expended in the lower 48.

Mr. COCKRELL. Well, I would agree with what Richard has said. I think you are seeing a little bit of turnaround in capital allocation between world exploration and domestic exploration. The international companies that are exploring worldwide are looking at cost defining on a worldwide basis. They are looking at access to leases and concessions on a worldwide basis too. And it is one thing to have a finding cost somewhere in Africa where you have got a million acres and it is $5.00 a barrel; and in the United States where you have 5000 acres and it is $5.00 a barrel. So there is size emphasis on where you might be exploring.

But from our personal experience, we are seeing international companies come back into the United States fairly strongly.

Mr. FOSTER. And I would just add that 3-D geophysics is considerably more expensive onshore than it is in the Gulf of Mexico or any offshore area. So as a result of that, there has been much less 3-D exploration been done onshore and again, I think that would—if you drill a dry hole, you can write it off, I mean it is a legitimate expense. If you shoot a 3-D survey and you do not get anything for it, it is still—it is not treated as an expense. So I think there is some basis for looking at the expensing or crediting of G&G.

Mr. CALVERT. You mentioned the Oil Pollution Act and other costs. What other challenges—what are the greatest challenges you face in trying to produce oil and gas onshore or offshore for that matter? What can we do to help get production up here in the United States?

Mr. FOSTER. The greatest challenge that we face is the availability of opportunities, and that is—for the prospects that we generate. So there need to be areawide lease sales so that when we generate an opportunity, that will be available. You need to take—MMS primarily needs to take actions which do not permit large chunks of acreage to be sort of locked up by one well or one group of wells, yet it holds a number of leases.

As I said earlier, independents need acreage to drill and any action which encourages that, we would support.

Mr. CALVERT. Thank you very much.

Ms. Jackson Lee.

Ms. JACKSON LEE. Thank you very much, Mr. Chairman.

If I might take just a moment of personal privilege with these three gentlemen. We ask that sometimes in the House and the Chairman does not allow us, but I see that he is smiling. I do want to thank these individuals and the companies that they represent for their civic and community participation. They have, over the years, been some of the most active participants in many of the community opportunities and activities from United Way to Boy Scouts to various charities that many in this city have gone to you for. And we are certainly grateful for that and acknowledge that your industry overall, in many communities around the country, have been some of the strongest supporters of charitable efforts,

and I think that is important. We thank you for that, we thank the employees who are associated with your businesses.

I would like to then—Mr. Kinder, it is good to see you—ask you in particular as it relates to Enron, knowing that you have spent some recent times and maybe projected into the future with heavy involvement in the international development. If I can get from you, since we are trying to really bring into light and focus this whole nebulous concept of a national energy policy, how would you view your own determined destiny? Are you more directed to international development because that is the chosen choice? Is there a balance that you would actively be pursuing domestic involvement with a different climate, or have you just simply made a business decision as to how your company will pursue over the next decade?

Mr. KINDER. Well, I think we have tried to look at the opportunities around the world, and to strike a balance there. We certainly have not given up on North America. We are the largest pipeline network in the United States and the largest merchant of natural gas in the United States. And this is very critical to us. But whether it is pipelines or processing, the asset part of the business in the midstream and downstream in the United States is a pretty mature business. And that is just an economic fact. And so if a company like Enron wants to maintain a growth profile, it is just necessary we think that we be involved internationally.

Again though, I would return to something I said in my remarks and in my slides, I think this international involvement can be a tremendous opportunity for American enterprise. We are involved all around the world and our partners are generally G.E. or—we're using G.E. or Westinghouse equipment. We are using Bechtel or Fluor to help us build these facilities. We are using American banks as part of the lending profile for these projects no matter where they are located. So I think there is—and obviously we have American employees here producing the physical assets that go into these power plants or pipelines.

I think one of the biggest areas we would like to see you concentrate on is what I said earlier, that we would like to see U.S. EXIM and OPIC encouraged to provide—and we are not talking about subsidies here, we are talking about market-related cost of lending to companies like Enron so that we can build these projects and drive home American jobs to build these assets that we use. So I think it is a very complicated thing, but it is one that I think can be of benefit for both a company like Enron, for our employee base, we are growing in employees, and for the manufacturers here in the United States. It is a real opportunity to go international, we think.

Ms. JACKSON LEE. You have touched, Richard, on sort of a myriad of issues. You have indicated that you have made a business judgment about international opportunities but they provide trickle down effect, and then you raise a question of OPIC with its direction more to providing those fundings for foreign entities versus allowing access for our American and domestic entities, which raises a valid point as to how the regulatory structures were initially determined, what would be the most value. And that is a question I think we have to ask now and reassess.

You have touched on something that drew me to this hearing, obviously it is here in Houston and many of you are housed at least in the 18th Congressional District and your employees along with certainly neighboring districts as well, but my district uniquely has a sizable population that faces unemployment and particularly as it relates to the skills that we would need as we move into the 21st century. I would like Ernie and Joe to talk about the outreach potential of jobs from the white collar as well to possibly trainees coming out of high school and going into some other technical aspects of the business. Is there some potential with a decided policy that reflects the Pollution Act modification, reflects area-based exploration that you mentioned, Joe, that I think is a very interesting point. It seems to me the more crowded field you have got out there, the more activity you have got going, the more positive results you may get. So I am interested in where you think we can go with this in terms of job creation.

Mr. FOSTER. One of the things about the technology that is being used in exploration these days is that it is relatively labor-intense in terms of technical people being acquired. We have wrung a lot of efficiencies and actually downsized a lot of people out of jobs through the application of technology in this business in the last ten years, but some of these technologies we are talking about now are actually requiring more technical people to get—to analyze the data and get these things done.

Ms. JACKSON LEE. So there could be a sort of technical training requirements and people could fall into those categories of being able to do those technical processes?

Mr. FOSTER. Probably an area that I think North Harris Community College is addressing that is of interest to us is training geological and geophysical technicians who can do a lot of the work with regard to entering data and managing the computers that does not require a professional geophysicist. So that is an area that we have encourage North Harris Community College to pursue.

Ms. JACKSON LEE. Ernie, when you answer the question, can you also, so that I can get my question in while the light is on and you can still answer, but in any event, would you also just comment—you talked about that job creation, I am very interested in that, but you did mention the Oil Pollution Act of 1990, which, as you well know, the whole idea behind it was some of the disasters that have occurred over the time periods with respect to pollution and oil spills, but technology has helped improve a lot of that and I think we have already made a record here today about the concern for the environment. Would you argue or would you be able to cite examples of improvement that would then argue against the need for such a high bonding, which is what it was all about, which is to protect against that? You might want to respond to that, since that was a concern you had.

Mr. COCKRELL. Well, the Oil Pollution Act of 1990 was in response primarily to the Valdez problem, which was an oil spill in cold water. The law affects our company in the Gulf of Mexico, which is primarily a warm water environment, and just the difference in environments mitigates a lot of the problems you have in any type of spill.

In addition to that, from an historical standpoint, there has never been, in any five year period in the Gulf of Mexico, a total combined cleanup in excess of $35 million, which is what the existing law pre-OPA 1990 was. What OPA 1990 does is it raises the financial requirement to $150 million from $35 million and historically you just do not see any need for that type of bonding. And that is on a per-company basis. So when you multiply that throughout the entire industry with the number of companies that are operating in the Gulf of Mexico, you are talking about billions and billions of dollars that in effect are not needed.

Ms. JACKSON LEE. You feel that you could be environmentally safe in different conditions that you have here.

Mr. COCKRELL. Oh, yes. The worst thing that could happen to my company is to have any kind of spill, regardless of how I feel about the environment. And I am very conscious about the environment, but I do not want a spill.

The other thing that is happening, from a technical standpoint, in the second part of your question, is that we can drill wells, complete those wells and produce those wells in the Gulf of Mexico better and safer than we ever have, because of technology.

Ms. JACKSON LEE. Can I see some more jobs for constituents—like I happen to represent inner-city youth—that might come out and develop some training skills and be able to work in some of these areas?

Mr. COCKRELL. I think the oil and gas industry from an historical standpoint has always been a big employer. We, like all industries, are becoming more and more technologically driven. And there are expanding jobs and new jobs in those technologies that are going to provide the type of opportunities for all citizens, and we encourage that process and do whatever we can to help it along. So I think there are opportunities and there are expanding opportunities, areas that have not existed before, because of the technologies.

Ms. JACKSON LEE. Gentlemen, I thank you. Richard, did you want to say something?

Mr. KINDER. Well, I was just going to add on the employment opportunities, certainly at Enron and these other companies around Houston, we are doing a lot, I think, to help HISD and the other school districts to implement better training, because clearly there is somewhat of a dichotomy here, a lot of what is going on requires a level of technical expertise, and I think we are very shortsighted as companies who are living and breathing in this town if we are not prepared to do everything we can to help the educational system, because the people who are currently in that school system are the future of Enron and Cockrell and Newfield and everybody else. And I think it behooves us to do that and I think we are all trying to do that.

Ms. JACKSON LEE. The skill base is very important. Thank you, Mr. Chairman. Thank you gentlemen very much.

Mr. CALVERT. Mr. Bentsen.

Mr. BENTSEN. Thank you, Mr. Chairman, I will be brief, I just have a couple of things.

Mr. Kinder, first of all, I want to thank you for bringing up EXIM Bank. As you know, there were some in this Congress who

thought perhaps that EXIM Bank was something that we did not need to do and I would concur with you that if we do not do it someone else is going to, and someone else already is, as you well know, in the world market. In fact, the studies that I have seen show that we lack considerably in providing export finance compared to some of our major competitors in a much more competitive world. And I also clearly see the support that you all have provided in the area of trade is paying off, and that is what we want to see accomplished.

Let me ask you, on the other side of that, there was a recent ruling by the World Trade Organization relating to methanol and clean fuels, and I know that Enron—I believe Enron has been involved with that. Certainly there are many other companies in this area which have made significant investments in methanol. I myself have written the trade representative asking that that be appealed. Of course, he has said he is going to appeal it, but I would be curious to hear the industry's viewpoint. Is this something you think we should fight, do you see a trend here or is this something that you all think you may pull back?

Mr. KINDER. No, I think it is something we should fight. And again, in the whole methanol/clean fuels area, those of us involved in that industry, all we ask is really essentially a level playing field, and I think that is what we are entitled to. And I think that there have been a lot of efforts to make that playing field not level, and this is an example of it. And so we would like to see that matter pursued.

Mr. BENTSEN. Well, we certainly allow foreign involvement in refinery operations in the United States and we—I think we do have some sovereign right to decide how refining will be done.

Let me ask you all this, and I have asked this before of others—is product pricing and price volatility a necessary evil of a free market energy, fairly free market energy policy for the country, again you reference, Mr. Foster referenced the 1978 Act. We occasional hear talk of the need for an import fee, I continue to believe that probably would not work or is probably inefficient, but certainly there are members of your industry from time to time who feel that a floor of some sort, a price floor of some sort or a fee might be in order. We had one gentleman who testified today who sort of talked about a quota type system. I would be curious about what your thoughts are on that.

Mr. FOSTER. If there is any one thing I think we should have learned from the events of 1973 forward, in both oil and natural gas, it is that the market works. It does sort out to supply and demand and make a match and there is volatility, that is true, but that is the way the market works and even that can be dealt with through the use of forward markets. We now have, I believe, a fairly well-functioning market in both oil and natural gas. So for those people who wish to erase volatility from their business, they have that opportunity. Some of us do that and some of us do not. You know, in January, we saw a lot of gas price volatility and those of us who had hedged and did well last year did poorly in January. We really would like to have participated in that volatility, but we made a decision and the opportunity was there. So the market is

functioning and I think that is the best course for this country to follow.

Mr. COCKRELL. I agree with that. I am personally very much opposed to any type of government interference into the market system itself. I think where the government can be of help is leveling the playing fields, having consistent rules and regulations that are fair and make common sense. We are willing to deal with the price issues and compete within those arenas, so I think that is an area that government should just stay out of, let the market do it.

Mr. KINDER. I would agree with everything both of them said, and would add on the level playing field that there are so many temptations or ways in which the playing field is tilted, and for example, from an environmental standpoint, we believe that the NOX emission standards on electric plants ought to be neutral and we have pushed for that as a gas industry very strongly. This helps I think reduce dependence on imported oil indirectly, but more importantly it helps the environment.

And again, we would like to see the government basically out of the business of mandating particular quotas or prices and we would like to see a level playing field so that natural gas is a tremendous asset for this country. We have incredible reserves, as you know, Ken, of natural gas here in Texas and elsewhere and we have a great distribution network around the country, very mature. And there are lots of opportunities for natural gas, which will lead to additional employment, additional benefit to the economy. If we just get a level playing field for it, it is going to win the day in terms of particularly new power generation in the future.

Mr. BENTSEN. I appreciate it. I imagine when Congress takes up the PURPA Act and everything else, that we will probably be hearing a lot more about that.

Mr. KINDER. That is right.

Mr. BENTSEN. Thank you, Mr. Chairman.

Mr. CALVERT. Thank you, Mr. Bentsen.

I had just one or two more quick questions.

Mr. Kinder, you mentioned that even though your Federal royalty payments are based on proceeds, MMS denies deductions of many of your costs. What can we do in this area to increase production, especially in the area of gas marketing, since that was brought up earlier?

Mr. KINDER. Well I think, again, a lot of this, Mr. Chairman, relates to certainty and eliminating uncertainty. And for example, one of the things I was referring to was that we need to have a clear policy as to how we value, how the MMS values gas that is produced, because in this complicated environment, very thin margins for example, companies are clearly doing everything they can up and down the food chain as it were, to enhance the value of that gas. And there ought to be a reasonable transfer pricing mechanism. And I think there are some steps being taken—using prevailing spot market prices in a given area is one—to restore some certainty to that process. The last thing you want to do is to make a big separate investment downstream to enhance the value of that product and then find that lo and behold you are making a royalty payment based on the improvement you have made to that natural gas, by virtue of that investment you made downstream.

So a lot of this I think—the devil is in the details and I would hope a lot of it could be worked out at that level.

Mr. CALVERT. One probably more of a comment than a question, it was brought up that the United States, at least the lower 48, is a mature market, there are no more elephants, as I heard. But we may have one left, up in—the Chairman of my committee, Don Young, points out to me almost daily in Alaska at ANWR and that is a big debate that is going on right now and I would just like to hear any comments you may have. We need to open that up in my mind and keep the pipeline open, since it accounts now for a substantial amount of oil production here in the United States and potentially a large, large gas production out of that. Is there any comment you would like to make?

Mr. KINDER. I certainly agree with that and that comes back to Joe's point about access is the most important thing. If you really want to increase the production and the amount of reserves in North America, the key is to get access to appropriate places to drill. Obviously under very safe environmental standards and I think overall we have a very good record there, but we would favor opening it up obviously.

Mr. FOSTER. Yes. To me, it is a matter of cost and benefits. You know, I realize some of these things are subjective, but in my judgment, without having made a rigorous analysis, the benefits of having the supply from ANWR could be significantly higher than the cost. I think the cost can be very well managed with very little detriment to the environment and I certainly think you should find out, you know. There should be enough activity taken to find out whether or not there really is a monster oil field there or not.

Mr. CALVERT. Thank you and thank you for your testimony.

Ms. JACKSON LEE. Thank you.

Mr. CALVERT. The next panel is Doug Smith, President and Chief Executive Officer of Lufkin Industries, Inc.; Cecil Nix, Business Manager for Local Union 460; and R.H. Rawle, Vice President and Group Executive, North American Operations, J. Ray McDermott.

First, I would like to introduce Doug Smith, President and Chief Executive Officer of Lufkin Industries. Mr. Smith.

STATEMENT OF DOUGLAS V. SMITH, PRESIDENT AND CHIEF EXECUTIVE OFFICER, LUFKIN INDUSTRIES, INC.

Mr. SMITH. Thank you, Mr. Chairman. I am Douglas Smith, President of Lufkin Industries, located in Lufkin, Texas. I am pleased to offer testimony regarding the employment and economic implications of the trends in our domestic oil and gas industry. Our company offers a clear view of what it is like to supply equipment and services to the oil and gas industry. This oil service industry of suppliers is largely hidden to the public, but we serve as critical members of the overall business to explore and produce gas and oil. We are not hidden to the communities that are homes to our warehouses and our factories.

Lufkin Industries was founded in 1902 in Lufkin, Texas, located in east Texas. Since the mid–1920's our company has been the largest supplier of pumping units in the world. A pumping unit is used to pump oil, it is probably the most visible and widely known piece of equipment to the public. Our products are found through-

out the world, but the biggest market has historically been in the United States. Although our primary manufacturing is done in east Texas, warehouses and service centers are located in several states.

I would like to refer you to the chart that is mounted, it is also in the back of the handout, and it really tells the story of the employment in our company, particularly the employment associated with oilfield equipment. This does not cover the total employment but that specifically tied to oilfield equipment.

The overall national data for job losses since the 1980's has been covered many times before today. At a more local and personal level, almost 3000 jobs have been lost since 1980 in Lufkin, Texas. This is in a town with a population just over 31,000 people. Understanding that the 1980 timeframe was a unique time in the history of the U.S. oil and gas work, it is meaningful to us today that there are 500 fewer jobs than in the 1960 to 1973 period that preceded the energy crisis of the 1970's. Further, approximately 80 percent of the jobs were related to domestic oil production during the 1950–1970 period, while today only 30 percent of the jobs are tied to U.S. activity.

There is little to add to the volumes of data showing 40-year low levels of activity in the United States. Our company is typical of many oil service companies that have spent the past 10 to 15 years consolidating operations and reducing costs while developing new markets and new products. Lufkin Industries is one of the few smaller companies that remains independent and operates as it traditionally has. Many independent equipment suppliers have merged or, through various transactions, moved into new configurations, almost always as a result of diminished oilfield activity and almost always leading to reduction of employment.

Our customers are the foreign national oil firms—I might add we have used the EXIM services many times. Our customers are certainly the major U.S. oil and gas companies and the many independent oil and gas companies that operate primarily in the United States. Our domestic business is tied to oil production, most onshore, but includes the marginal or stripper wells that produce small volumes of oil each day. Those small volume wells account for approximately 20 percent of the total U.S. production today. The viability of all the U.S. oil and gas operations, both small and large, ties to our company's opportunities in the oilfield. Our customers' problems with regulation, royalties, access and other issues are our problems eventually. They also become problems for our communities.

Oilfield equipment and service supplies such as Lufkin Industries have had to respond to all the challenges that other manufacturers in the U.S. see in different industries. We meet competition around the world by investing and constantly improving our products and our operations. We also make the tough decisions to reduce costs and seek other opportunities.

The supply to an industry that produces commodities is, of course, complicated by the swings in the supply and prices. But in recent years, the market for oilfield equipment as we have seen in the U.S. has not had these normal swings, but has taken on the characteristics of a permanently smaller market. The economic challenges that have driven innovation, many of which have been

referred to today, to reduce the finding and production costs have taken place and only the efficient participants in the industry survive today, not only from the E&P part, but from the service sector as well.

Many companies, including Lufkin Industries, have invested in other areas of our economy that have far greater economic promise, at least for now. We have essentially been forced to go other ways even though we are one of the standard brand names in the oil industry.

We count ourselves among those who believe that the U.S. still has great potential for oil and gas production and we plan to be a part of the industry regardless of what happens in the short-term. We have stoically accepted the rough and tumble of the free market and taken the necessary action, but at a real price to employment.

I hope that my comments have helped to understand what it is like in the front lines of the oil and gas service industry. I have spent the past 24 years in those lines. I urge that you consider carefully the many initiatives that could increase production in the U.S. and the impact of several issues of importation and balance of trade.

I appreciate the opportunity to appear here today. Thank you.

Mr. CALVERT. Thank you, Mr. Smith.

Before I continue, I want to point out, though I know you have been through a tough period, I was up in Kern County just a few weeks ago at the large oilfield—as you know, the largest oilfield in California, and I would have thought that Lufkin owned that county because of all of the equipment that you have in that area.

Mr. SMITH. We have certainly been a participant and we appreciate the changes that have led to the increased activity there.

[The statement of Mr. Smith may be found at end of hearing.]

Mr. CALVERT. Cecil Nix.

STATEMENT OF CECIL E. NIX, BUSINESS MANAGER, LOCAL UNION 460, INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS

Mr. NIX. Thank you, Mr. Chairman.

My name is Cecil Nix, I am Business Manager of Local Union 460, International Brotherhood of Electrical Workers in Midland, Texas. We certainly appreciate the opportunity to be here today.

Our effort is to try to put a face on what we feel like is a direct result of the decline in the oil and gas industry in west Texas and indeed throughout the nation. I think everyone here would agree that the loss of jobs that the industry has suffered through the years is not an apparition, it is a very real thing. These are real jobs lost by real wage earners. A couple of the startling things that I have uncovered in my preparation for this hearing was certainly that the jobs lost—I do not think there is much question—the jobs lost over the last 12 to 15 years have paid substantially more than the jobs created. And the second one that really startled me is that virtually the only area of growth, and that is an actual increase in jobs, in the oil and gas industry has been the growth of jobs in service stations, gasoline service stations. We find that to be a little bit startling and certainly frightening in our experience.

Also, we feel in order to fully address these issues, the United States government has got to take a position at some point to move away from the divisive issues that turn up, politics, philosophies and those kinds of things and get back basically to really putting a face on what the problems are that are generated. And those are real jobs lost.

The reality is too that the people that have been losing those jobs have been family people who saw their opportunity to put their children through college, buy a home, do the things that the American dream is built on. And certainly in these days and times with the jobs lost, these things are not coming to fruition for those people.

No longer can we sit by and watch this industry be quartered up and sold off to other countries, moved offshore. The citizens of the United States with all its vast natural and human resources, deserves to have leaders with enough foresight and integrity to stand up four-square and take the issues of the wage-earners to heart.

The real story, particularly out in west Texas, is that the state of the oil and gas industry and the lack of a national energy policy that would encourage American companies to provide jobs for American workers, cannot be found in these charts and graphs but are actually found on the front porch of the Texas Employment Commission where people stand looking for work, looking for opportunities that no longer exist in the oil and gas industry. We would encourage the leaders of this country to take those issues to heart and really look inward and make decisions based on what are good for American workers and not politics again, and divisive philosophies.

Thank you.

[The statement of Mr. Nix may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Nix.

Mr. Rawle, Vice President and Group Executive, North American Operations, J. Ray McDermott.

STATEMENT OF R. H. RAWLE, VICE PRESIDENT AND GROUP EXECUTIVE, NORTH AMERICAN OPERATIONS, J. RAY MCDERMOTT

Mr. RAWLE. Mr. Chairman, members of the Committee, my name is Bobby Rawle, I am Vice President and Group Executive for the J. Ray McDermott North American Operations. I currently live in Morgan City, Louisiana, but I am transferring to the land of ice and snow, Houston. I appreciate your invitation to appear today before the Committee to discuss the economic impact that development of oil and natural gas has on contractors such as J. Ray McDermott and the local communities that serve the industries. Although you asked me to comment on the impact of declining production, I have chosen to emphasize a more positive approach. Specifically, I will outline today what I consider to be one of the few remaining frontiers of the United States oil and natural gas development industry, the deep water Gulf of Mexico.

At the outset, I would like to convey my appreciation of the Committee's initiative last year in pushing through the House of Representatives a very beneficial and effective incentive for our industry, which has been mentioned several times, the Deep Water Roy-

alty Relief legislation. Your efforts will certainly increase production. Even though the regulations have yet to be written into a final rule, oil companies are already applying with the MMS for royalty relief for their deep water leases. Without royalty relief, these cost intensive leases probably would not have been developed. Such government incentives will maintain and even increase our domestic production and our oil patch work force in the future.

As you know, the deep water area of the Gulf of Mexico has estimated reserves in excess of 12 billion barrels, but it represents a challenge to industry and the government to develop cost-effective technologies and policies to recover those resources. Deep water drilling and the associated costs of recovery increases exponentially with water depth. McDermott fabricated the deck, performed the hull to deck mating, installed the platform and laid the pipelines on the deepest project in the world to date—the Shell Auger Tension Leg Platform—which is currently producing in 2800 feet of water in the Gulf of Mexico. This massive project helped support over $400 million in contracts in 30 states across the United States. Attachment 1 of my statement includes a map which breaks down those contracts by state. The Gulf coast states were awarded the lion's share of the work but I believe it is vital to point out that the oil business is not confined to one area of this country. This project drew from an employment pool consisting of a variety of skill levels, from entry level to Ph.D. engineers. To illustrate the magnitude, Shell Oil supplied me with the graphic that is on the stand now, which superimposes their second TLP, the MARS platform over downtown Houston. As is clearly seen, development in the deep water of the Gulf of Mexico demands complex solutions.

Although a success story, only three percent of leases issued in over 650 foot of water are currently being developed, which leaves employment opportunities in oil and oil service industries greatly depressed when compared to those of the early 1980's. Overall, employment in the petroleum industry fell from 1.8 million to perhaps 1.4 million from 1981 to 1993. McDermott's domestic operation unit is a prime example of this trend. In 1981, our fabrication facility employed about 3050 people. By 1987, we saw that employment drop to a little under 400. Wage rates and benefits were reduced, as McDermott entered a survival mode with the rest of the oilfield industry. In 1996, as a result of some guarded optimism in deep water, our yard employs about 1170 workers and our hourly rate of pay for skilled labor has just returned back to the 1982 levels. Research has shown that for every job created offshore, ten jobs are created onshore. However, the great bust of the 1980's and the cyclical nature of the business has greatly damaged the labor pool from which we draw. Additionally, votech schools have seen a decline in people seeking training in skilled crafts. Only steady growth and stability will result in reviving the industry and local economies that depend on it.

In 1993, DRI-McGraw Hill conducted a study which showed that an active exploration and development program in the deep water of the Gulf of Mexico could create up to 100,000 new jobs, with 80,000 of these jobs being sustained beyond 25 years. In order to achieve this goal, almost every major name in the offshore development business in the United States has begun to participate in

Project DeepStar. DeepStar is an industry-led effort to cut costs and improve technologies which will make development in waters up to 6000 feet an economic reality. Just as the U.S. space program progressed from the first Mercury mission to the eventual Apollo missions and the lunar landings, DeepStar will create radically new methods of resource recovery. Today, I am enthused to report that, under Project DeepStar, companies are sharing an unprecedented amount of information and have agreed to collectively determine a development strategy for the deep water Gulf of Mexico.

Like the space program though, these goals would not be accomplished without some government incentive. The development of high risk technologies for a complex integrated system of hardware and science will require expertise throughout the United States. Although I realize your committee does not have jurisdiction over the Department of Energy's budget, we might suggest that a pilot program be created within DOE for the purpose of specifically researching deep water development and I would ask that if and when the appropriate Congressional committee conducts such a hearing, that we be included to comment on the program.

In summary, I would like to conclude my remarks with a few thoughts:

One of the only remaining frontiers currently available to dramatically increase oil and natural gas output in the United States is in the deep water of the Gulf of Mexico.

The exponential costs and technology demands for developing finds in up to 6000 feet of water can only be achieved through increased partnering, teamwork and innovation within the private sector and the private sector partnering and teamwork with the United States government.

Increased offshore activity will help stem the flow of increased imports, will create thousands of skilled workers and will increase revenues to the United States Treasury through royalty payments and income taxes.

New technologies will not only have other domestic applications, but if the United States takes the lead in deep water technology development, we will be able to export those skills worldwide.

Mr. Chairman, members of the Committee, thank you for affording me this opportunity.

[The statement of Mr. Rawle may be found at end of hearing.]

Mr. CALVERT. Thank you, Mr. Rawle.

I would like to invite Secretary Mosbacher to join this panel, to give his testimony and later answer some questions. Mr. Mosbacher is Chairman of Mosbacher Energy Company and obviously most of us remember him fondly as the past Secretary of the Department of Commerce. Welcome, Mr. Mosbacher, we look forward to your testimony.

STATEMENT OF ROBERT A. MOSBACHER, CHAIRMAN, MOSBACHER ENERGY COMPANY

Mr. MOSBACHER. Thank you, Mr. Chairman. I apologize, first of all, for having been here earlier and having to leave for a few minutes, and I appreciate having the opportunity to testify now. I think you have heard a lot from our industry and the tales of woe.

So with your permission, I will just enter what I had written into the record and just make a few comments.

Mr. CALVERT. Certainly.

Mr. MOSBACHER. First, you may remember that Senator Bentsen, other good Democrats, good Republicans, said a long time ago that when we got to the peril point we had to do something. And he defined the peril point as 50 percent imports.

Now by some counts, we are just perilously close to 50 percent imports. But when you are producing a little over six million barrels a day and you are importing about eight million barrels a day, that is over 50 percent, by my count. And I think we are at that peril point.

First of all, in an area that I used to know a little about, our balance of trade and our deficit, the cost of oil that we import is, if we continue at $20.00 a barrel, which we hope minimally we will be at this year, will be $57 billion, perhaps $60 billion this year, cost to the U.S. Now that does not count the indirect costs that come from importing all that oil and all the other problems, and those indirect costs do not include the military and other costs that go with safeguarding the importing of that oil.

So the imports cost us a huge amount. By the last year that I was in the government our deficit was about $90 billion, so you can see $60 billion is two-thirds of the entire trade deficit on that level.

Well, obviously we should be thinking about doing something about that. And that is what I am sure you have heard a lot about today. But some of the things we can do—and true, the U.S. is a mature province, we have drilled more wells in the U.S. than the whole rest of the world put together—but there is still a great deal of oil to be found, there is a great deal of oil to be produced by new methods. The horizontal drilling, the laterals. I have been in meetings recently that shows that some of these old wells can be tripled and quadrupled in production and the reserves can be lifted a great deal. The potential for additional gas reserves is huge and we need to not only revitalize our oil industry, but perhaps even more important than that is an expansion of our gas industry where we have really all the gas we need in this country, certainly in North America. And properly utilized with the proper amount of incentive, we do not have to import so much oil, but we can also replace oil with gas in many places for a cleaner environment.

So instead of some of the stringent environmental laws that are not cost-effective, we ought to be eliminating those and looking at what will help our environment more, and that is by encouraging the use of natural gas in everything from transportation to power to all other aspects.

We see that in the Gulf of Mexico, we have a tremendous potential for both oil and gas, perhaps more for gas again than for oil. I am sure you have heard from others about the OPA of 1990 that limits independents getting out there. That should be changed, in my view. We see that some of the other environmental costs make it difficult. Royalties should be changed where we can spend money to go in and do additional work. There are all sorts of tax incentives that should be brought forth.

But if in this Congress there are not going to be any new tax incentives, there are lots of other ways by getting rid of the stringent

environmental laws that are counter-productive and encouraging companies to come and drill in the U.S., stay in the U.S. and drill. We are in many other countries drilling, we have drilled all over the U.S. Why are we doing so much overseas, besides the fact that there is quite a bit of oil over there? Because they are competing, each government, whether it is Indonesia or U.K., where they have cut out royalties completely, are competing for American dollars, American oilmen with know-how. Let us keep those people here. Let us build jobs in the U.S., let us build our treasuries by the taxes the U.S. companies will pay by the income they make in the U.S., and let us broaden our own self-interest and do it in a way that also helps our security, our national security and our economic security.

Thank you, Mr. Chairman.

[The statement of Mr. Mosbacher may be found at end of hearing.]

Mr. CALVERT. Thank you, Secretary Mosbacher.

You bring up an interesting point.

Ms. Jackson Lee must leave and I am sorry that she has to go, but thank you for staying with us all this time.

Ms. JACKSON LEE. I cannot thank you enough, Mr. Chairman, and certainly these outstanding witnesses. I can only affirm and applaud that this is the approach that we need to take—to reinforce job creation here in working with all parties, and I know we will be doing that in the future.

Thank you very much for your testimony.

Mr. MOSBACHER. Thank you, drive carefully.

Mr. CALVERT. A good point, Secretary Mosbacher and also maybe everyone would like to comment on this, and maybe especially Mr. Nix. In the west, we have lost a tremendous amount of jobs and opportunities because of what some people would refer to as over-regulation, environmental regulation, in the west that exceeds, to some people's minds and mine included, what benefit we may derive in environmental compliance. In other words, we have done a lot to clean up the environment, we should continue to do all of that, but we have gone beyond rational thinking to the degree where it has cost, I would say, hundreds of thousands of jobs in the west and certainly in the oil industry it has cost people some opportunities also.

I would hope that labor can work with the environmental community to come together to find some rational balance, if you will. In my area in California, the forest industry has been just—the lumber industry has been devastated, as you probably know, in the northwest, in Oregon. These are high paying jobs. The mining industry in the west has been devastated, again high paying jobs. If we are looking at blue collar jobs, probably resource oriented jobs are the highest paying jobs in the United States. And when we remove those opportunities, it hurts the people, the blue collar the most. The white collar people are going to get by and they are going to move to other industries, but the people that Mr. Nix represents are going to be hurt the greatest. So I hope that we can communicate a little bit better. I do not know if you have any comment about that, you may want to add to that.

Mr. NIX. Well, I do. In our research and what we were able to find, since 1982 to 1994, there have been over 450,000 jobs lost in the oil and gas industry alone. And the point you make is a point that we have to bear in mind, and that is balance. Getting embroiled in things, environmental issues versus jobs, it all comes down to real people. And as we move into the future, we have to maintain that balance and maintain an ideal of putting people to work, providing their families with what they need to be provided with, and set aside a lot of the other divisive issues that we encounter along the way.

Mr. CALVERT. We are working now presently, as you know, on incentives to get the oil industry specifically back on track. As you know, we already completed deep water provisions. We have my legislation on royalty fairness which we believe will increase royalties to the Treasury but at the same time make it easier for oil companies to produce domestically here in the United States. We are looking also for changes in the heavy crude industry which I know that Mr. Smith obviously has a big customer in California in heavy crude and we are trying to make that easier to operate, both in California and in Wyoming, which are two large heavy crude producers.

Are there any other suggestions that you would like to make that we can do in Congress, it is a new day, we are attempting to work with this administration and this Congress, my Chairman who is obviously very interested in expanding opportunities, this is a chance to let me know.

Mr. SMITH. It is my position that the oil service industry, in a way, is at the end of the feeding chain. It is a little like being at the end of the line when the whip goes off. And so we see some tremendous swings. So rather than having our own specific recommendations, we would certainly refer to those who are closest to the exploration and production activity and the various initiatives that they have in mind really need to be looked at strongly. We are really in the responding end of the market and we have had to take some unusual responses but we are not close to some of the issues that they deal with every day.

Mr. RAWLE. We certainly agree that we are at the bottom end of the feeding line. One thing I think you can keep in mind as you go forward is that from our industry, what we have seen is a lot of people who have left the industry, just flat left the industry. And we are actually in need of people right now, we are in need of people who have skills and it is not available.

We are very much involved locally in Louisiana with a program called Tech Prep which is a smaller subset of school work and I would encourage you—and the Committee is dwindling—any time there is legislation from a school to work program which is basically giving people the alternative not to have to go to college and in actual fact probably 60 percent of the people who graduate from high school are not intending to go to college anyway. And they are kind of the neglected majority, if you will, and need a place to go. And we think there is very much an opportunity for training in the school level that would produce skilled workers when they come out of high school.

Mr. CALVERT. Any other comment on that?

Mr. MOSBACHER. I think, as these gentlemen have said, there has been a loss—and whether it is 450,000 jobs or I have heard over 500,000 jobs—I remember when this happened even on a smaller scale in the steel industry, there was a tremendous outpouring of anger and sympathy. Frankly, we have not seen much of that in the oil industry. And so specifically we need to see some things done, we need to make more available more Federal land, we need to look at the entire spectrum of regulations, environmental and otherwise, and see which ones are important for the safety of our people, and obviously keep those. But there are a lot that are included in there that are totally unnecessary and counter-productive and very costly. So I would recommend that that all be reviewed.

Mr. CALVERT. Thank you.

One last comment, and as you know, I mentioned this to all the panels, since I work with Don Young, he is technically my boss, he is the Chairman of the Full Committee, I bring up ANWR every chance I get and I know Secretary, you worked on that when you were Secretary, it is still there, we still have not explored it. It is probably the last major oilfield on the North American continent. A lot of people from Texas work on the north slope, I was just up there a little while ago and you meet people from Texas everywhere in the world in the oilfields. This is the last big opportunity and we need to get everyone to encourage the administration to get ANWR together because we have an opportunity right now and I hope you will help us out.

Thank you very much. I appreciate your testimony. We are all through with your testifying and I appreciate your views. I am just going to mention that the record is going to remain open for two weeks for submission of additional written materials and also that Congressman Jackson Lee has asked that you say in the record that in the absence of Commissioner Mauro of the Texas Land Commission, his Associate Deputy of Energy Resources, Mr. Cary Overton, was present for the hearing. So Mr. Overton was present, thank you very much. I appreciate that. And thank you very much, gentlemen, for attending. Have a good day.

We are adjourned.

[Whereupon, at 4:31 p.m., the Committee was adjourned; and te following was submitted for the record:]

Congressman

GENE GREEN

29th Congressional District of Texas

News Release

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FOR IMMEDIATE RELEASE
Friday
February 2, 1996

FOR MORE INFORMATION
Contact: Elizabeth Miller
Phone: 202-225-1688

CONGRESSMAN GREEN TO PARTICIPATE IN HEARING ON CURRENT STATE OF OIL AND GAS INDUSTRY

(HOUSTON, TEXAS) — U.S. Congressman Gene Green (D-Houston) will attend a hearing today hosted by the Resources Subcommittee on Oversight and Investigations. The hearing is being held to discuss the economic and employment effects of the continuing decline in the U.S. oil and gas production.

"I am pleased the Resources Committee is conducting this fact-finding hearing in Houston. As a vital center of our petroleum industry and oil capital of the world, Houston has known first hand the benefits of a strong oil and gas industry and the devastating costs of a weakened industry. We are also home to a number of companies that have prospered internationally and can provide this panel valuable information about their experiences abroad," Congressman Green said.

"We must do everything possible to keep these oil jobs in America. We have lost about half a million jobs in the last decade and we can't afford to lose any more.

"I will follow the progress of these congressional hearings and help the Committee on Resources find ways to revitalize the domestic oil and gas production, identify new markets, and secure good paying jobs for Americans."

– END –

MEDIA INFORMATION

Congresswoman
Sheila Jackson Lee
18th District — Texas

FOR IMMEDIATE RELEASE
FEBRUARY 1, 1996

CONTACT: PAULINE HIGGINS
SEAN CONNOLLY
(202) 225-3816

Jackson Lee to Take Part in Energy Oversight Hearings

Congresswoman Sheila Jackson Lee will participate on the panel of the House Resources Committee oversight hearing on the economic and employment implications of declining U.S. oil and gas production. The hearing will take place at 1:00 pm in Ballroom C of the George R. Brown Convention Center in Houston, Texas. The hearing will be proceeded by a press conference that will take place at 10:30 am in room 303-A, also in the George R. Brown Convention Center.

The witnesses will include representatives of the federal reserve, several major energy producers, organized labor several state resource boards, and several major universities. The hearing will discuss the declining production as well as skills and strategies for the future of energy production in America.

"Houston is home to many leading American and international producers of oil and gas and as such, is an appropriate location for these hearings. This type of open and constructive discussion in an arena that houses the nations' leading oil and gas companies will lead to real answers to the challenges that confront this nation as we move into the 21st century," stated Jackson Lee.

Congresswoman Jackson Lee has been a consistent fighter for increasing jobs in the domestic energy arena. "This hearing is important to job creation in Houston and in the 18th Congressional district. I am glad to participate in a hearing that will create jobs and develop our domestic energy industry through increased production and efficiency," concluded Jackson Lee.

###

1520 Longworth Office Building • Washington D.C. 20515 • Tel. 202-225-3816 • District 713-655-0050

Forces Shaping the U.S. Exploration and Production Industry

Statement Of

Victor A. Burk
Managing Director
Energy Industry Services
Arthur Andersen LLP

Before The

Committee on Resources
U.S. House of Representatives

Houston, Texas
February 2, 1996

Arthur Andersen

23-712 O - 96 - 3

Since crude oil and natural gas prices collapsed in early 1986, U.S. exploration and production companies have been on a roller coaster ride that has caused an industry-wide case of near-terminal whiplash.

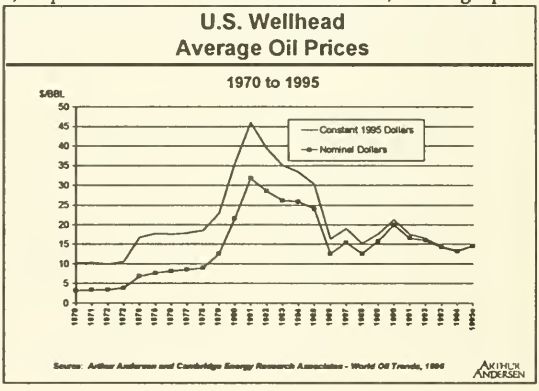
During the past ten years, managements of exploration and production companies have been challenged to simultaneously grapple with wild oil and gas price volatility, make bet-the-company investment choices, adapt to industry-wide restructuring waves, and survive in an adverse political climate. The lessons learned during the past ten years -- along with evolving global market fundamentals and constantly improving technologies -- are creating a new breed of exploration and production company that has learned to survive and, occasionally, prosper in an extended low price/tight margin environment. But the price of these lessons has been high.

This paper provides an overview of industry trends, industry responses to the low price environment of the past ten years and the outlook for the U.S. exploration and production industry.

Industry Trends

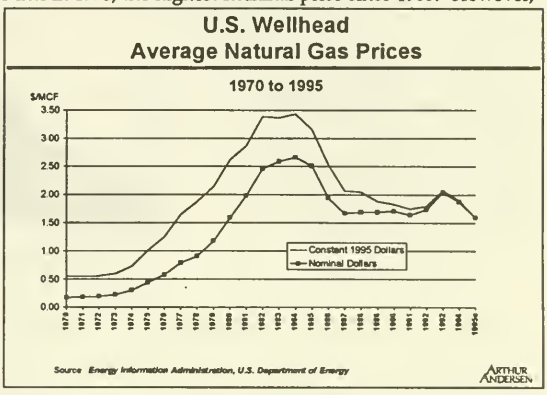
The starting point is the most fundamental of trends -- crude oil and natural gas prices.

Since the Arab Oil Embargo in 1973, oil prices have been on a roller coaster ride, reaching a peak of $31.77 per barrel in 1981 ($46.03 in constant 1995 dollars). Oil prices collapsed in 1986 after Saudi Arabia flooded the market in an attempt to regain market share. In 1994, nominal oil prices fell for the fourth straight year, reaching their lowest level since 1988. In 1995 constant dollars, 1994's $13.34 per barrel average U.S. wellhead oil price was the lowest since 1973. In 1995, the U.S. wellhead average oil price rebounded slightly, increasing to $14.64 per barrel. Oil prices are expected to remain relatively flat for the remainder of the decade.

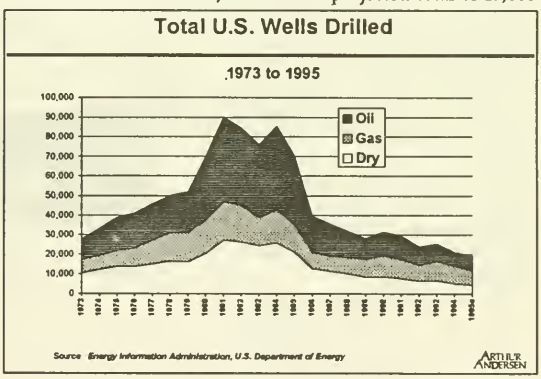


The natural gas industry has also endured a series of price swings. Natural gas prices enjoyed strong growth during the late 1970s and early 1980s, peaking at $2.66 per thousand cubic feet (mcf) in 1984 ($3.43 per mcf in constant 1995 dollars). Prices then dropped sharply and remained

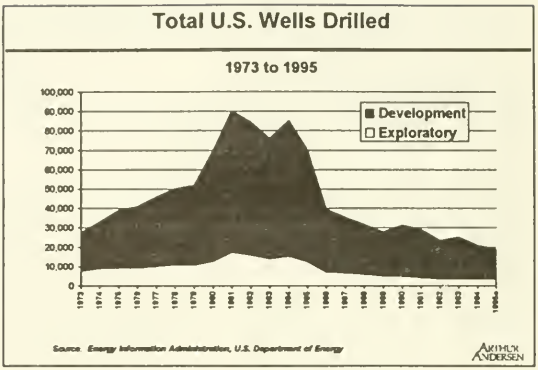
in the $1.65 to $1.75 range from 1987 until 1992. Prices increased sharply in late 1992 and maintained an average of $2.04 per mcf in 1993, the highest nominal price since 1985. However, in 1994 as a result of an unseasonably warm winter, the U.S. wellhead average natural gas price dropped to $1.88 per mcf. Natural gas prices continued to drop in 1995 averaging approximately $1.60 per mcf, the lowest level in nominal terms since 1979 and the lowest level in 1995 constant dollars since 1976. However, due to a colder winter in 1995-1996, the U.S. wellhead average natural gas price should increase in 1996, although there will be significant price differences among different producing regions due primarily to pipeline transportation constraints. As with oil prices, natural gas prices are expected to remain relatively flat for the remainder of the decade.



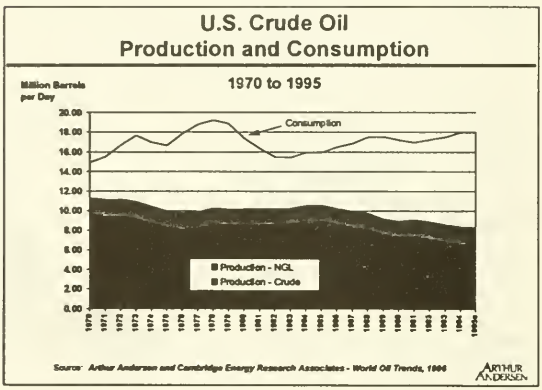
Drilling activity in the U.S. is at the lowest level since 1945, with 1995's projected total of 19,000 wells drilled down 79% from the peak of just over 90,000 drilled in 1981. This dramatic decline has had an adverse impact on the energy services and supply industries as well as the exploration and production industry. Although the number of natural gas wells has declined by more than half since the mid-1980s to approximately 7,400 in 1995, gas wells now account for roughly half (51% in 1995) of all successful wells drilled in the U.S., up from just 29% in 1984.



Not only has the total number of wells drilled reached a post-war low, but the number of exploratory wells drilled has also declined significantly, from a high of 17,500 exploratory wells in 1981 to approximately 3,500 wells in 1995. The decline in exploratory drilling raises the question of whether sufficient new reserves will be discovered to meet rising demand.



U.S. crude oil consumption increased 20% between 1970 and 1995 to 17.98 million barrels per day (mbd), the highest level since 1979. U.S. crude oil production (excluding natural gas liquids) fell 32% to 6.53 mbd during the same period. 1995 marked the tenth consecutive year that U.S. oil production has declined except for a slight increase in production in 1991 resulting from the war in Kuwait. U.S. crude oil and petroleum products imports rose by 166% between 1970 and 1995 to 10.05 mbd.



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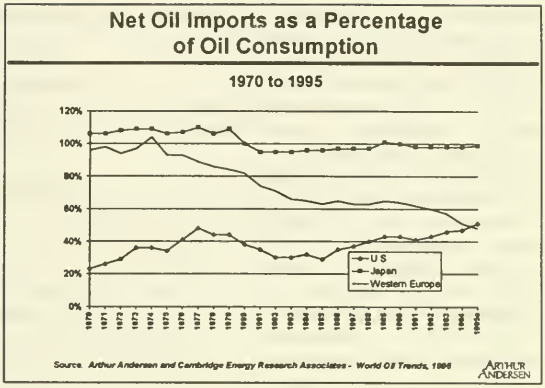
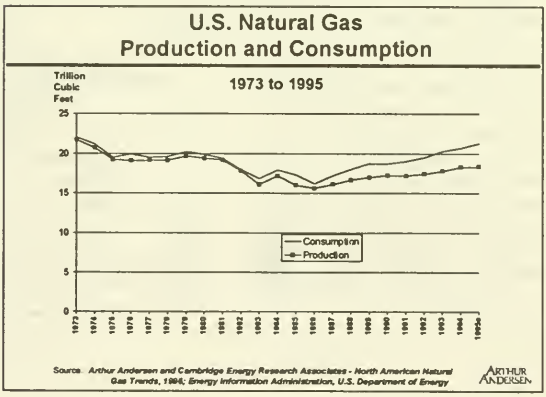
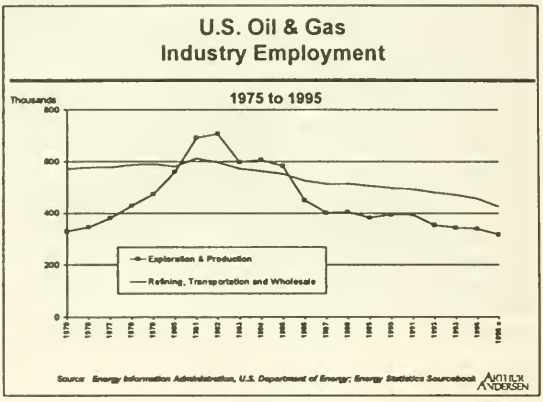
Net oil imports (total imports less total exports) as a percentage of oil consumption for the U.S. declined from 1979 until 1985 and has climbed steadily since then, reaching an all time high of 51% in 1995. As a point of reference, this compares to 99% for Japan and 48% for Western Europe in 1995. In addition to the energy security issues related to increasing imports, the cost of imported oil now exceeds $55 billion per year, or $150 million per day.



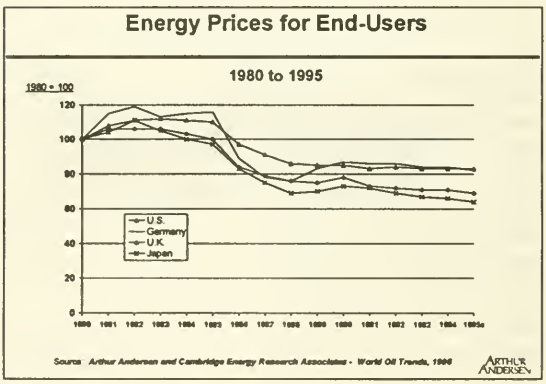
U.S. natural gas consumption increased 31% between 1986 and 1995 to 21.3 trillion cubic feet (tcf), the highest level since 1973. During the same period, U.S. natural gas production increased only 18% to 18.4 tcf in 1995 while natural gas imports increased 260% to an estimated 2.7 tcf in 1995. Natural gas production has increased each year since 1986 when production reached the lowest level in the period 1973 to 1995.



The most visible impact these changes have had on the U.S. oil and gas industry can be measured by the dramatic decline in employment. From a high of more than 709,000 jobs in 1982, oil and gas exploration and production sector employment has fallen more than half (55% or 393,000 jobs) to 316,000 in 1995. In the downstream refining, transportation and wholesale sectors, employment declined 30%, from its highpoint of 612,000 jobs in 1981 to 426,000 in 1995. In total, approximately 579,000 jobs have been lost in the U.S. oil and gas industry (excluding retail operations and oilfield services).



As prices increased during the 1970s and early 1980s amid concerns regarding energy security, the U.S., as well as other countries, became more energy efficient. Energy prices for end-users has declined in most of the major industrial countries, including the U.S. In fact, real energy prices are well below their levels in 1980. Real energy prices for end-users in the U.S., Germany, the United Kingdom and Japan are 69%, 82%, 83% and 64%, respectively, of the levels in 1980.



Industry Responses to the Low-Price Environment

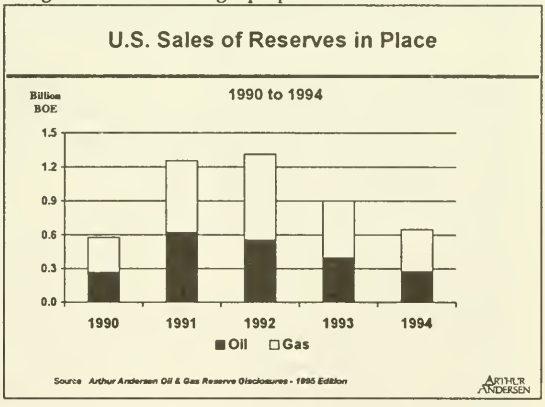
Many companies reacted too slowly to the volatile environment of the mid- to late-1980s and early 1990s, and have fallen by the wayside or were acquired by other companies. Since 1984,

over 300 publicly traded companies and many more privately owned companies have disappeared from the industry.

On the other hand, those companies which did react have often taken drastic steps. These actions fall into five general categories, with most companies employing several of them as basic strategic elements of their survival plans for the 1990s. They are:

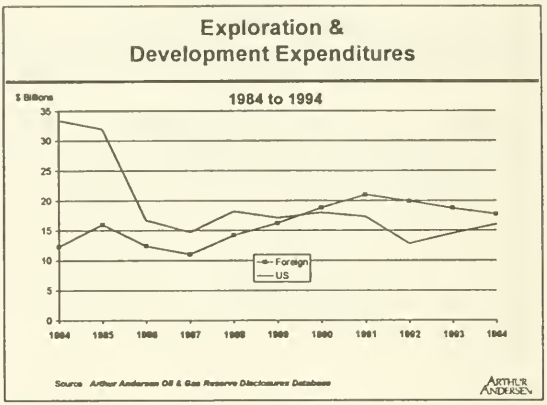
Reducing costs. All companies, large and small, have gone through a sequence of steps in their efforts to reduce costs. The first was layoffs, usually of progressively larger size, resulting in the loss of 393,000 jobs in the U.S. exploration and production industry since 1982. Many companies have followed-up with several rounds of restructurings, downsizing, and rightsizing. Today, these companies are deeply involved in reengineering their operations to focus on core competencies, achieve competitive advantages, improve performance and, in the process, further reduce costs. In the process, further reductions in the workforce often result, such as Mobil's announcement in May 1995 of plans to layoff 4,700 employees (700 of which are in Mobil's U.S. downstream businesses). Although personnel layoffs are the most visible means of reducing costs, many energy company managements have learned to evaluate closely the question of how lean a company can be before it becomes anorexic.

Restructuring assets. All companies, large and small, have and are continuing to buy, sell and trade assets in an effort to rationalize their holdings and operations, enhance the value of their asset portfolio and concentrate on their core competencies. However, according to the 1995 Arthur Andersen *Oil & Gas Reserve Disclosures* survey, sales of domestic oil reserves declined 31% in 1994 to 275 million barrels and sales of domestic gas reserves decreased by 27% in 1994 to 2.2 tcf as the pace of disposition of marginal and non-strategic properties slowed. U.S. reserve quantities acquired by the companies in the survey fell 21% in 1994 to 941 million barrels of oil equivalent (boe), reflecting continuing progress by many of the companies in the survey in focusing on core areas. Natural gas properties represented 66% of all purchases in 1994, equaling the highest previous level in the five-year survey period, as the major oil companies became net purchasers of U.S. gas reserves for the first time in at least five years. Sales of domestic oil and gas reserves rebounded in 1995 and included several mergers and acquisitions.

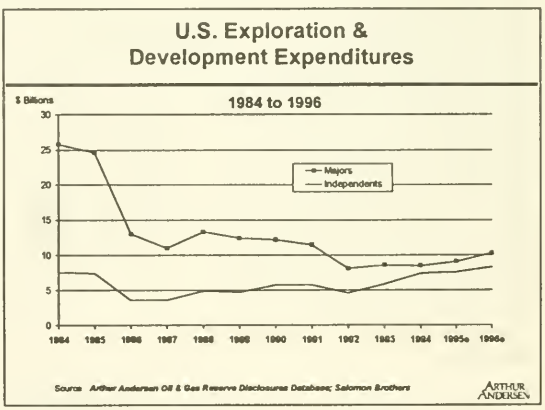


Redirecting exploration and development strategies. One of the best indicators of how individual companies have adapted to the uncertain price environment is the changes they make in exploration and development (E&D) spending -- capital spent to find and develop new oil and gas reserves domestically or in foreign countries.

Taken as a whole, E&D spending by the industry (represented by over 175 publicly traded companies included in Arthur Andersen's annual *Oil & Gas Reserve Disclosures* survey who focus their efforts in the U.S.) has made a major shift during the past decade. From 1984 to 1989, these companies spent $50 billion, or 61% more ($132.1 billion vs. $82.1 billion) to find and develop domestic oil and gas reserves than on foreign properties. This trend shifted in 1990, and these companies spent $17.5 billion, or 22% more ($96.1 billion vs. $78.6 billion) during 1990-1994 on foreign E&D than in the U.S. This is a reflection of many companies' strategies emphasizing international opportunities that offer the greatest potential for a meaningful impact on reserves, production and cash flow. However, many companies also believe attractive opportunities still exist in the U.S. and the gap between foreign and domestic E&D spending is narrowing. Total U.S. E&D spending increased 25% in 1994 to $16 billion compared with 1992's low of $12.8 billion. According to a recent Salomon Brothers survey, U.S. E&D spending increased 4.4% in 1995 and is expected to rise 11.4% in 1996. Foreign E&D spending declined by 16% in 1994 to $17.7 billion from 1991's high of $21 billion.

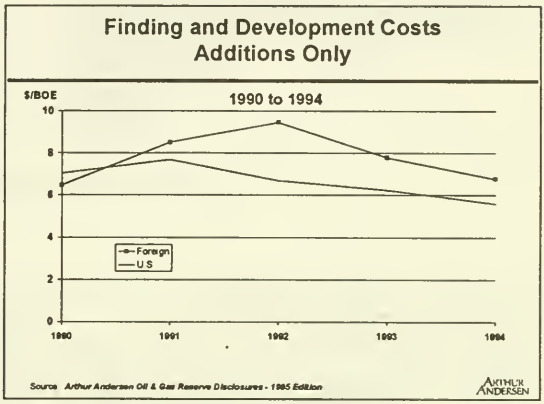


Domestic E&D spending by independent oil and gas companies rose to $7.4 billion in 1994, a level 106% above the eleven-year low of $3.6 billion in 1986. Domestic E&D spending by the major oil companies was $8.5 million in 1994. In 1994, domestic expenditures accounted for 35% of total E&D spending for the majors, while accounting for 79% of the independents' E&D spending. The recent Salomon Brothers survey indicates that U.S. E&D spending in 1996 will increase 9.3% for the independents and 13.4% for the majors. Some of the majors are planning significant increases in E&D spending in the Gulf of Mexico.

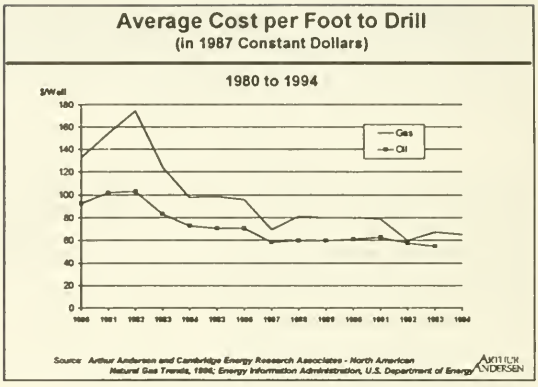


Investing in technology. All companies, large and small, are investing in new technologies aimed at reducing the cost of finding, developing and producing new reserves, including three-dimensional seismic interpretation and CAEX technology, horizontal and directional drilling, deep water drilling, and subsea and floating production facilities in deep water. The investment is paying off.

Technology improvements and E&D operating efficiencies brought the cost to find and develop new reserves in the U.S. down 10% to $5.59 per barrel of oil equivalent (boe) in 1994. The majors cut costs 20% to below $5.00 per boe in 1994 for the first time in the 1990s. The comparable foreign reserve replacement costs declined 13% to $6.78 per boe in 1994, the lowest level since 1990. Over the five-year period 1990-1994, finding and development costs averaged $6.61 per boe in the U.S. and $7.72 per boe outside the U.S.



The average cost per foot to drill a well has decreased dramatically from 1980 levels. For oil wells, the cost (in 1987 constant dollars) was $54.67 per foot in 1993, down 59% from 1980 levels, and for gas wells was $64.95 per foot in 1994, down 51% from 1980.



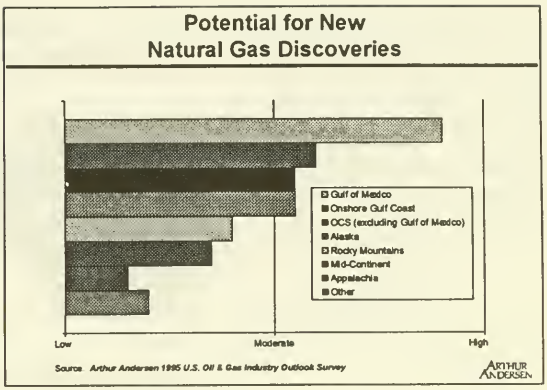
Forming new alliances. New business alliances ranging from international joint ventures to partnering are being used by many companies. Many exploration and production companies are forming strategic alliances with drilling contractors, seismic companies and other energy services companies that enable the E&P companies to reduce their costs and the service companies to improve their profit margins. E&P companies are also beginning to explore outsourcing of non-core activities, such as accounting, tax, information systems, human resources and legal, as another means to reduce costs and focus on core activities that add value.

Outlook for the U.S. Exploration and Production Industry

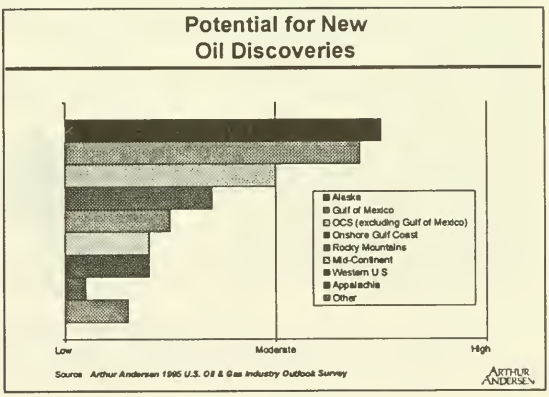
For eight years, Arthur Andersen has conducted a survey of oil and gas industry executives regarding their outlook for the U.S. exploration and production industry. In our 1995 survey conducted in late October/early November 1995, we received responses from 121 companies. Some of the key findings are summarized below.

When asked to assess over 25 countries for overall attractiveness for investment in oil and gas exploration and development activities, the United States was rated the highest, although only slightly above "moderately" attractive.

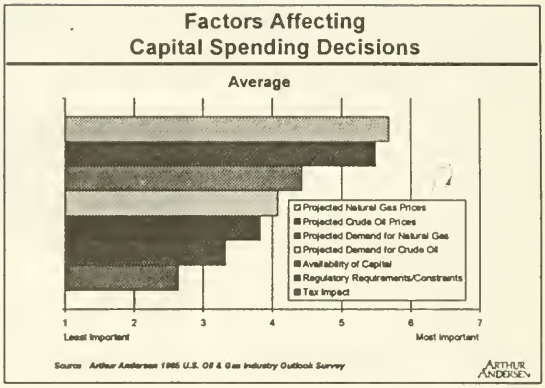
Regarding natural gas reserves, ninety-two percent of the respondents believe that there are significant reserves remaining to be discovered in the U.S. The prices believed to be necessary to significantly increase the domestic natural gas reserve base continues to decrease, with over half (53%) of the respondents saying an average price of less than $2.50 per mcf would be required. The areas with the highest potential for new domestic natural gas discoveries are the Gulf of Mexico and the Onshore Gulf Coast.



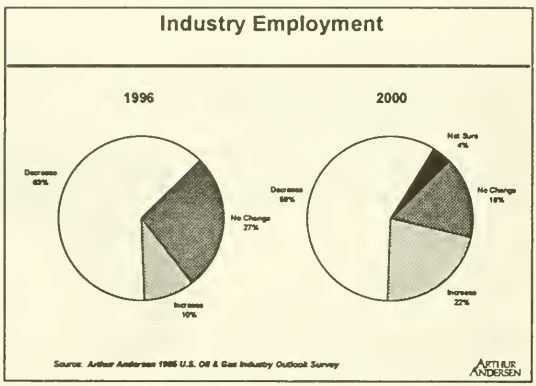
Regarding oil reserves, fifty-five percent of the respondents believe that there are significant reserves remaining to be discovered in the U.S., which is more optimistic than previous surveys. The prices necessary to increase the domestic oil reserve base continues to decrease, with over half (51%) of the respondents indicating an average price of $20 per barrel or less would be needed. The respondents believe that the areas for highest potential of new domestic oil discoveries are Alaska and the Gulf of Mexico.



Several factors affect companies capital spending decisions. When asked to rank these factors, projected oil and gas prices were clearly the most important factors affecting capital spending decisions. This has been a consistent finding in the past four surveys.

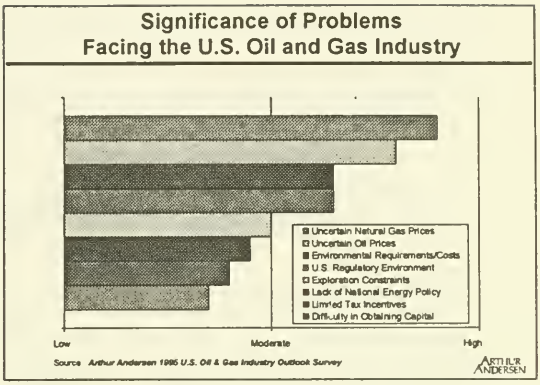


The industry employment outlook for 1996 continues to be less optimistic than the previous year's survey. Sixty-three percent of the respondents to the 1995 survey expect decreased employment in 1996. The longer-term employment outlook is slightly more positive than the short-term expectations with 22% of the respondents expecting industry employment to increase in 2000 while 58% expect a decrease.



ARTHUR ANDERSEN

Consistent with previous surveys, industry executives continue to believe that uncertain natural gas and oil prices are the most significant issues facing the U.S. oil and gas industry today. Environmental requirements/costs, the U.S. regulatory environment and exploration constraints are at least a "moderate" issue.



Conclusion

What conclusions can be drawn from this overview of the forces shaping the U.S. exploration and production industry?

First, the industry will live in a tight margin environment for the remainder of the 1990s because oil and natural gas prices will remain relatively flat.

Second, many companies, both majors and independents, believe attractive opportunities still exist in the U.S. as clearly demonstrated by the significant increase in U.S. exploration and development spending in the U.S. and their view that there are significant natural gas and oil reserves yet to be discovered in the U.S.

Third, the investment in new technologies by both large and small companies is paying off as demonstrated by the reduction in finding and development costs and average cost per foot to drill wells.

Fourth, U.S. crude oil production will continue to decrease and oil imports will continue to increase unless exploration and production companies are given the opportunity to explore for new oil reserves throughout the U.S.

Fifth, use of natural gas will continue to increase and the demand growth can be met by increased U.S. production if exploration and production companies are given the opportunity to explore for new gas reserves throughout the U.S.

Despite a depression that has lasted ten years, the leading U.S. exploration and production companies have the capability and spirit to achieve the potential that exists in the U.S. exploration and production industry. I encourage you to listen to and understand the views of these companies in today's and future hearings.

Formal Testimony for the Written Record

Submitted by

Dale W. Steffes
Founder and President
Planning & Forecasting Consultants

To the

U.S. House of Representatives
Committee on Resources

Honorable Don Young
Chairman

Honorable Ken Calvert
Subcommittee Chairman
Energy & Mineral Resources

Committee Hearing Feb. 2, 1996,
Houston, Texas George Brown Conv. Ctr.

Mr. Chairman, Members, Fellow Participants, Media, Other Attendees

My name is Dale Steffes, I am an independent strategy consultant. I formed Planning & Forecasting Consultants 23 years ago, prior to the first oil embargo. Texas Governor George Bush recently appointed me to serve on the Interstate Oil & Gas Compact Commission.

It is my intention to present some different ideas and thoughts from the conventional energy industry wisdom in my allocated time. My testimony is based on our energy models, which have a proven track record

My company's principal service is assisting companies and countries with their strategic planning and strategic forecasting tasks. I want to stress that I am not a management consultant, rather I am a strategy consultant. Good management is doing **things right**, while good strategy is doing the **right things**. Also, I have formulated and documented in the public literature, a World Oil Stability Policy for OPEC and IEA Neither side has accepted this policy yet, but they eventually will see the merits of this oil stability policy.

I want to thank the Committee for holding your energy oversight hearings in Houston. I have long held that more than half of the world's significant oil exploration wells are decided in Houston

I share the committee's concerns about our country's declining domestic oil & gas production and also about our increasing dependency on foreign oil I agree the nation's public lands and outer Continental shelf can play a major role in both of these concerns.

The key reason why the U.S. developed their petroleum resources before other nations developed theirs was because our country has honored private property rights. When oil was found on one property, the neighbors quickly responded by exploring under their property. Individuals can always make economic decisions faster than group decisions.

Our public lands and OCS are essentially community property, and therefore the economic decisions for petroleum exploration are much more difficult to reach consensus Society's members need to know the common benefits and common costs. Currently, there is little public consensus on the benefits and costs of oil production from our public lands

The United States' energy problem should be considered as two separate energy problems:
First, the U. S. petroleum producers are forced to use false domestic oil price signals
Second, the nation's cost for security of oil supply can not be adequately quantified

The nation's oil security cost is an intangible number. The governmental interagency task force assigned to address this subject has been procrastinating for more than a year. Their Dec. 1993 assignment was to produce a written report by December 1994. This Interagency oil security report is still not available.

The cause of false oil price signals is because oil is fungible. making all oil competitive in value to end users However, the cost of oil production varies immensely around the world To illustrate, both United States and Saudi Arabia each produce about 8 million barrels per day The cost difference is evident when the number of wells required are compared The U.S requires 600,000 wells, while Saudi Arabia needs less than 3,000 wells (a half a percent) to produce about the same daily total.

The world marker price for oil, measured at New York and Rotterdam is based on a combination of this low production cost oil and high production cost oil with small differentials for logistics and quality. Essentially, this one world marker oil price is always wrong Normally it is too low for U S domestic producers and higher than necessary for many foreign oil producers.

In today's free trade world, Saudi Arabia and other low cost oil producers will continually gain market share against the United States domestic oil producers The more dependent the United States becomes, the more vulnerable we are to political and economic disruption.

For the U.S. to avoid this overdependencc on foreign oil suppliers, some form of market intervention is required Many in the domestic oil production industry desire a floor price, or import tariffs Others want to tax energy to lower consumption to domestic production levels Still others want some form of tax benefits All of these market interventions will lessen the U.S oil dependence, but they all cost the domestic consumer more, either directly or indirectly.

The National Energy Stability Policy, I have formally proposed (see news clipping) to the Clinton Administration in January of 1993 would resolve both of these energy problems It is described further in a published paper, which is included in my written testimony Copies of the formal offer to President Clinton are available as a separate handout.

Briefly, our proposed national energy policy would have the President set the maximum percentage of total energy imports This decision should consider national security, international competitiveness and balance of trade considerations. As President, he can adjust the country's energy dependency percentage as he views the overall U.S concerns. The exhibit in our testimony briefly describes the operation of the policy

The President would implement a regulation requiring that all energy imported into the United States would require an import ticket. These valuable tickets would be earned by producing domestic energy at the ratio the President determined safe and prudent The earned value of the oil import tickets would subsidize domestic energy producers

This policy would eliminate the threat of low oil prices on domestic producers. Also eliminates the threat of high oil prices on consumers If OPEC lowers their price to gain world market share, the value of the ticket increases and the domestic producers are subsidized even more.

The following are the projected financial effects per year with implementation of this policy:

Reduce the energy import bill and balance of trade by $12 billion
Increase the energy producers income by about the same or 15 cents/MMBTU
Eliminate Department of Energy expenditures by $6 billion
Increase U.S. income taxes collected by $4 billion
Decrease the Department of Defense expenditures by $X billion
And would not increase the cost of energy to the United States consumer, something all other proposals do, either directly or indirectly.

I have a letter from former OPEC Secretary General Subroto confirming that this policy would perform as our world energy model predicts. That letter is included in the article in my written testimony.

This energy policy would naturally increase the employment in the energy production sector, but this would probably be offset by decreases in employment in the Department's of Energy and Defense.

Quite naturally, the Department of Energy has been reluctant to respond to our policy, because it essentially performs their prime mission, national security of oil. This essentially eliminates the need for the energy security function of the DOE. Fifty house members recently introduced a bill to eliminate the DOE.

The world is now entering a new era for the oil companies, as many Countries and States are now working very hard to entice petroleum exploration and production in their domain. Case in point, Venezuela, Indonesia, Texas, Alaska. Former USSR countries. Even the United States changed the royalty rates for deep water offshore production. Most government leaders today want oil companies to bring their expertise, management skills and money into their jurisdiction.

Thank you very much for the opportunity to present a different solution to our national energy problems with the Committee on Resources I am presently in the process of raising funds to publicize this policy for general public acceptance. I stand ready to answer any questions or provide supplemental data to you or your staff.

The Houston Post MONDAY, January 25, 1993 C

BUSINESS HOUSTON

Consultant pitches plan

Houston energy consultant Dale Steffes has a different plan for curbing dependence on imported oil, and he ⁻ks to deliver his National Energy) ⁻ility Policy to President Clinton early this week. His idea. Anyone producing energy from any domestic source would get a federal "ticket" to import one unit for each four units of domestic energy produced

Details/page, C-4.

ENERGY

Houston energy consultant pitching his plan to Clinton

BY SAM FLETCHER
POST ENERGY WRITER

Houston energy consultant Dale Steffes has a different plan for curbing the country's dependence on imported oil and to stimulate the oil patch economy. But it's a plan he wants to administer himself to keep it free from politics.

Steffes plans to deliver his National Energy Stability Policy to President Clinton. The letter should reach Washington early this week.

"Everyone is trying to get his or her ideas in to the new administration," Steffes said. "I'm trying to do the same. But I'm convinced mine will work better than any other approach for reducing oil imports."

Under Steffes' plan, anyone producing energy from any domestic source — oil, natural gas, coal, nuclear, hydropower or any alternative — would receive a federal license or "ticket" to import one unit of oil for each four units of domestic energy produced. Units would be measured in British thermal units.

Because most energy producers in this country are not integrated companies involved in importing oil, Steffes expects a market to develop for those tickets.

He claims the trade in import tickets will transfer to domestic energy producers about $12 billion a year that otherwise would go to foreign oil producers. Steffes said it shouldn't raise consumers' cost.

"The cartel will try to set oil prices as high as they can, but it won't work," Steffes said. "OPEC may own the oil, but we own the market. It's possible to decide the maximum amount of oil that we'll import based on a percentage of our national energy demand."

Steffes would put that import level at 20 percent of our total demand for all energy — about the same as it is today.

Steffes has already outlined his plan to representatives of the Department of Interior, the Bechtel Corp., the National Coal Association and the U.S. Council for Energy Awareness, among others, during a briefing at the National Press Club in Washington in October.

He claims his plan would provide the necessary feedback to monitor how much the United States is paying for energy compared to the rest of the world. "We need a higher price for our domestic oil than the rest of the world," he said, because of higher production costs.

But Steffes wants to be the one to administer the program through a proposed Private Energy Stability Commission, rather than leave it to politicians who may be tempted to grant exemptions to countries such as Mexico, Canada or others.

Ira Strickstein/The Houston Post

Dale Steffes of Planning & Forecasting Consultants hopes to offer his idea to help the energy industry to President Clinton.

"I would make it a clean system with no political exceptions," Steffes said. He claims America's nearest oil- and gas-producing neighbors enjoy "a logistical advantage" anyway.

Steffes says he can manage the program at no cost to the federal government and with the possibility of saving billions of dollars from Energy Department operations. "All I want is 10 percent of the tickets," he said. "Ten percent is not much for an idea."

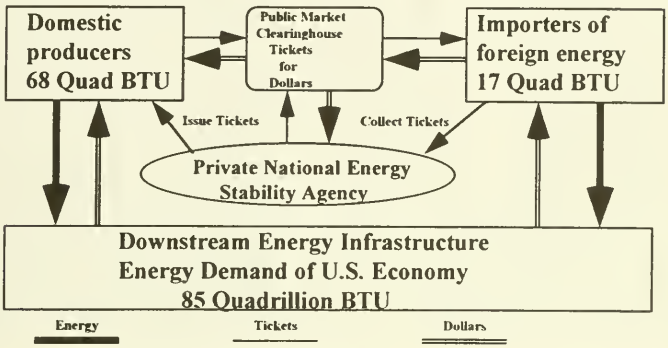
Steffes claims his plan will produce additional savings by reducing Defense Department expenses for protecting oil supplies in the Middle East. But it's too soon to say by how much, he said.

Boosting income for domestic producers will result in their paying more federal and state taxes, he said, as opposed to foreign production, which contributes nothing to the U.S. tax system.

National Energy Stability Policy

(Performs DOE's principal function, maintaining U.S. oil security)

A Simple U.S. Import Energy Control Model



Required actions to implement.

1. U.S. President implements a CFR that all energy imported into the U.S must have an energy import ticket. The President currently has this legal authority.

2. U.S. President sets national maximum energy percentage dependency based on national security, balance of trade and international competitiveness considerations (For example, assume the President sets United States energy dependency at 20%)

3. U.S. Government accepts the Private National Energy Stability Agency's (PNESA) offer to operate the policy at zero cost to the government. Domestic producers would report their monthly production to the PNESA. PNESA would then issue import tickets proportional to their production. All producer's production data would be audited by the PNESA

4. These energy import tickets would be earned by producing domestic energy. (Using the example dependency, for every 4 BTU produced, the producer would earn the right to import 1 cheaper foreign BTU. These import rights would have value, which would subsidize domestic energy production. The producers could import energy themselves or sell their earned tickets to other importers. A public market would soon develop to establish the value of the import ticket. This control system automatically limits energy imports to the percentage level determined safe and reasonable by the President.

5. PNESA would collect import tickets for each unit imported. Imports would be limited to the amount of import tickets earned. Also, the energy imports would be audited by PNESA

6. PNESA would retain 10 percent of the import tickets to operate the NESP control system as a private enterprise. The federal government would audit the PNESA.

7. When U. S. consumers required additional energy, it will automatically come at this ratio, four from domestic and one from foreign. This policy automaticaly guarantees domestic producers a set percentage of the total domestic energy market. This system removes the threat of low oil prices on producers and also lessens the threat of disruption by foreign suppliers

Trend Discontinuity

Volume 16, Issue 2 Natural Resources January, 1996

P&FC's Contribution to the Energy Issues Dialogue

Three recent energy publications cause us to publish this **Trend Discontinuity**. The three reports are: National Petroleum Council's **Future Issues** (August, 1995), Interstate Oil & Gas Compact Commission's **Visions of the Future** (August, 1995), and Jeff Share's new book **The Oil Makers** (December, 1995).

Two of these publications present individual views of the petroleum industry, while the third, the NPC is a collective view of the petroleum industry issues. **The Oil Makers** presents twenty-five individual views, while the IOGCC report has ten individual views. All merit serious consideration which I duly acknowledge. However, a more comprehensive, viable energy policy was offered by us to President Clinton.

This **TD** is a similar type of written analysis on the United States petroleum industry. It is a reprint of an article published in 1993 in **Strategic Planning for Energy and the Environment**. The title is "***Proposed: A National Energy Policy to Distribute Petroleum Resources More Fairly.***" The article was based on the formal **NATIONAL ENERGY STABILITY POLICY PROPOSAL** that was offered to President Clinton in January, 1993. This offer remains pending.

Our NESP is now entering the next level of the Venture Management process. The domestic petroleum industry will make a serious mistake if they overlook the merits of this viable national energy policy. This policy resolves the domestic petroleum industry's most critical problem, having to use a **false oil price signal.** It also addresses the nation's critical energy problem: **security of oil supply.** Incredibly, it resolves both of these problems without an increase in the domestic consumer's **cost of energy**.

A Plan to Correct One of God's Mistakes

PROPOSED: A NATIONAL POLICY TO DISTRIBUTE PETROLEUM RESOURCES MORE FAIRLY

Dale W. Steffes, P.E.
Planning & Forecasting Consultants

Mr. Steffes proposed his National Energy Stability Policy, which is outlined in this article, to President Clinton on Jan. 21, 1993. A Department of Energy representative acknowledged receipt of his proposal, made no comment on it, and responded that DOE "was committed to an energy tax."

Mr. Subruto, Secretary General OPEC, also reviewed author Steffes' proposal. His response to it is included as an appendix to this article.

Mr. Steffes has been a long-term advocate of energy price stability. His article in the Winter 1985/86 issue of *Strategic Planning for Energy and the Environment* entitled "Energy Industry Leadership can Eliminate World Energy Constraints" urged a shift from an adversarial relationship between oil *producing* nations and oil *consuming* nations to a collaborative process.

There is recent evidence that, little by little, such a change is taking place.

A century ago, the earth scientist's believed that nature (i.e. God) hid on this earth about 5 billion barrels of crude oil, and nearly all of it was buried in Pennsylvania, USA. A half century later, earth scientist's believed most of the world's crude oil was in formations along the United States Gulf Coasts, Texas-Oklahoma-Louisiana.

Today, the earth scientists believe the great majority of the world's crude oil resides in the Middle East, Saudi Arabia-Kuwait-Iraq-Iran.

A half century from now, where will the earth scientist's say the

majority of the world's crude oil be located? One earth scientist believes this crude oil center will eventually shift to South America.

What caused these paradigm shifts of crude oil resources to take place? Man traditionally thinks in terms of scarcity. However, nature (i.e. God) has frequently replied in terms of overabundance.

First, why did nature (i.e. God) bless some parts of the world with more natural petroleum resources than others? To many of the less endowed countries, it appears He clearly made a mistake.

This natural resource endowment mistake is correctable by creating, designing and operating a process that converts some of the benefits of this natural gift to others. We propose that the United States adopt a National Energy Stability Policy that switches some of these financial benefits of the God-given natural resources back to the United States and also to the rest of the world, by lowering the price they pay for crude oil.

Naturally, the richly endowed oil nations will likely resist sharing their wealth with others.

Petroleum Industry Briefing

First, we need to establish why the petroleum industry started in the United States. The logical answer is because of our system of private ownership of land, including the subsurface mineral rights. Upon the discovery of oil, neighboring landowners would also look under their land for similar oil resources, with the hope for huge riches. Most nations of the world still lack this entrepreneur system of private land ownership to assist them with their natural resource development.

This original "finding of oil" phenomena then created the need for the petroleum earth scientist profession. This typical for most new industries: first a risk taker makes a discovery, which requires a new profession to explain how it operates. A classical example is the first airplane, built by the Wright Brothers, who were bicycle builders. The aeronautical engineering profession then came into existence after the fact to explain the science of why airplanes could fly. After they eventually learned how and why airplanes fly, the profession could then improve on the theory and design.

After the initial oil discovery, the professional earth scientists tried to shed light on why oil is where it is and where else it is likely to be found. Their science is mostly by analogy. The earth scientist's tools

improve continuously into a modern day high-tech science, enhancing the economic discovery and recovery success.

The success of the oil finders and producers became so great that soon there was a glut of oil, and naturally the unit price fell. Mr. John D. Rockefeller understood the industry better than most and capitalized on his knowledge.

He became the ultimate middle man. He brought order to the industry and at the same time made a fortune. He designed and created the first big integrated oil organization, Standard Oil Company.

Other parts of the world, i.e., Russia, southeast Asia, etc., also developed oil supplies. Royal Dutch Shell recognized this and capitalized on understanding the need to transport this oil via ocean tanker to the consuming centers. This started the international major oil company phenomena, i.e., Seven Sisters.

Soon these major recognized the over-supply of world oil. Informally, they created a "stand still" agreement to prevent discounting of oil prices to gain market share in the world. They agreed to maintain world market shares" as is" among themselves.

A New Glut

Then come another glut of oil supplies with the huge oil field found in East Texas. This again depressed the world oil market. The state of Texas took control of its destiny with state laws on production allocation (Texas Railroad Commission), and interstate laws (Connally Act) on transportation of crude oil. Again, this brought some order to the world oil market.

World War II erupted and the United States petroleum industry responded by fueling the Allied war effort. At the end of World War II, the U.S. was producing 60 percent of the world's oil.

After the war, fear of running out of oil again resurfaced. The domestic petroleum industry had persuaded the federal government to grant a tax depletion allowance for oil production. This depletion allowance distorted the price signals for U.S. domestic oil by keeping the world oil price too low. This false low price signal caused the worlds' producers to quit looking for oil and the consumer's oil demand to be higher than it should have been. This artificial low U.S. Gulf Coast price became the basis for the world oil price.

"Project Independence"

By late 60's and early 70's, the United States began to publicly acknowledge its energy dependence problem. President Nixon declared "Project Independence," a policy to make the United States energy self-sufficient by 1980. The National Petroleum Council (NPC) issued studies indicating that the price of oil would need to be in the $10 to $12 per barrel range. The United States now produces only about 15 percent of the world's oil.

The Organization of Petroleum Exporting Countries, OPEC, formed in the early 60's, recognized that this NPC oil price forecast was valid, and thy implemented actions that brought the world oil price to this level. The critical event often associated for raising the world oil price was the so-called "oil embargo of 1973." The world oil price would have reached this level with or without the oil embargo.

The world struggled with this oil price discontinuity, increasing the price from $3 to $11 in less than a year. It caused financial hardships, especially for many third world countries. However, the money was recirculated back to the paying countries through the international banking system, but leaving them highly indebted. This oil price increase brought world inflation and high interest rates. In the United States, domestic energy price regulation was much less than successful.

Solving the Problem? Creating New Ones?

Jimmy Carter became the U.S. President in 1976. His main goal was to solve the U.S. energy dependence problem, which he did. Under his administration, the U.S. total energy dependency went from 23%-12%. A lot of domestic energy legislation passed during his administration, including the famous windfall profit tax on oil. It is the author's conviction that this windfall profit tax raised the world oil price to $34/barrel, whereas the world oil price would have peaked around $25/barrel without it.

This world $34/barrel price signal was a major industry pricing mistake and caused investment errors by both the producers and consumers of energy. The consumers enacted "rampant conservation" and the producer's bought too much equipment, acreage, and increased personnel. An even higher oil price scenario of $50 to $100 oil caused even more poor investment decisions.

The world did establish two energy facts from the experience of the past two decades. Three dollar oil in early 1970 dollars is too low and thirty-four dollar oil in early 1980 dollars is too high. These extremes now provide reliable, tested price limits. The history of the oil industry is a repeating cycle of scarcity fears and then mechanisms to control the over-abundance.

What Is The Correct Price?

What is the correct world oil price? In our judgment, there is no one correct world oil price. Because oil is very fungible, is easily and cheaply transportable, it makes for a one universal world oil price. Oil has essentially become a standard commodity, traded (priced) on the world commodity markets, New York, London, etc. These market prices interrelate to each other.

The oil reserves of the world still seem to be increasing. When I started Planning & Forecasting Consultants in 1973, most earth scientists perceived the world to have about 600 billion barrels of oil reserves remaining. The world uses about 20 billion barrels of oil reserves remaining. The world uses about 20 billion per year, therefore the belief at that time was that the world had only 30 years of oil supply remaining.

Over the last twenty years, the world has consumed about 400 billion barrels and the world now has presently 1000 billion barrels in reserves. This means that the world added 800 billion barrels of reserves over the last two decades, consuming 400 billion barrels and adding 400 billion barrels to the present reserves. The United States is an exception when it comes to oil reserves increasing. The U.S. crude oil reserves are still declining.

The world's oil reserve life; index increased from 30 years to 50 years over the last two decades. Some of this increase is attributable to improved technology, but more probably, mostly was due to the world oil price being set above the true equilibrium supply and demand price.

More Glut Ahead

Today, many nations want to develop their indigenous natural resources. They are inviting the major international oil companies to their

countries for their technology and capital. These majors are switching their exploration and production budgets away from the U.S. to these foreign nations. When this capital and technology switch become effective, the reserve life index and world oil glut will become even greater, causing even lower world oil prices.

What is the correct oil reserve life index for the world? If the present oil supply seemed reliable, today's reserve life index would be much more than adequate. Twenty to thirty years of oil reserves would seem to be an adequate supply.

Maybe, when the oil reserve life index gets down to 25 years, the petroleum exploration industry should then resume the hunt for new oil reserves. But economic logic discourages spending money to hunt for oil to be consumed fifty years later.

The petroleum industry is one of the prime drivers for the world's high level of industrial development. It was a transcendent step in the development of the industrialized world. However, the development of the petroleum industry did more than replace human, animal, wood, and coal power. The petroleum industry became a source of wealth for individuals and countries. Many of the world's largest and most successful companies are oil related.

Even more relevant, the petroleum industry became the source of revenue for government operations. On the supply side, many producing countries collect economic rents above their cost of service. On the demand side, many countries collect taxes on energy to subsidize their economies. Other countries (such as Russia) subsidize their energy consumers with cheaper energy than the cost to produce. Whenever countries use false energy price signals, they generally end up with bad results.

The World Energy Bill

Our world energy model shows the world energy bill at $1.8 trillion per year. This is with a world GNP of about $20 + trillion per year, or close to 9% of GNP. Our judgment is that the richly endowed oil producing countries are reaping an economic rent of $100 billion per year more than their true production costs.

On the other side, the consuming countries are also reaping a windfall through energy taxation. Our judgement is that the industrialized nations are reaping $200 billion from energy consumption taxes. If OPEC and the IEA countries did not extract these funds for their government, the world energy bill would only be $1.5 trillion, or 7.5% of GNP. What a bargain for the citizens of the world!

The United States is currently debating the addition of an energy tax of $25 billion per year. Europe is also considering increased energy taxes. The OPEC response is: if the consuming nations want higher energy prices, OPEC will provide them, rather than the consuming nations extracting higher energy taxes. OPEC's problem is: they can not mandate higher world oil prices, because higher world oil prices will then cost them their world oil market share.

The United States, which consumes 25 percent of the world's energy and produces 20 percent of the world's energy is facing an exceedingly high oil dependency, over 50 percent. This is an unacceptable energy dependency for the world's remaining political and economic superpower. President Clinton is on record to take action on this U.S. oil dependency. His first political action has been to increase taxes to reduce energy consumption, which will also raise revenue for the government, but not materially reduce the U.S. energy dependency.

The Real Energy Problem

The United States first needs to recognize and state the nation's real energy problem:

> "Oil is priced all around the world in U.S. dollars, with a small differential for logistic and quality. This one universal oil price for the whole world is always wrong, it is normally too low for U.S. oil producers and higher than necessary for the rest of the world's oil producers."

This problem requires some form of "market intervention" to avoid increasing U.S. domestic energy dependence. An import tariff or floor price would work, but will disrupt the economic system with higher energy prices for the U.S. consumer.

A Proposed Solution

Our proposed National Energy Stability Policy for the United States segregates the U.S. from the rest of the world, energy-wise. What we have

done is draw a "green line" around the United States to limit energy imports to a Presidentially set, safe BTU percentage. All energy imported across this green line would have to submit an energy "import ticket" to the Private Energy Stability Commission (PESC).

The party with the energy import tickets would have a valuable asset because they would have the right to import cheaper cost foreign oil with their tickets. The question is: To whom should these tickets be distributed?

The government would authorize the PESC to issue these energy import tickets to domestic energy producers proportional to their domestic energy production. This would automatically preserve a Presidentially set percentage of the domestic energy market for domestic energy producers. For example, producing four domestic units would earn the right to import one foreign unit.

This way, the U.S. consumers can still have any amount of energy they are willing to pay for, but their energy must be provided at the ratio of four from domestic sources and one from imports. This policy would automatically maintain the U.S. total energy dependency at today's 20%. Without this policy, the U.S. energy dependency will be 33% in the year 2000 and 66% oil dependent.

If the United States wants to retain its superpower status, it must not become excessively dependent on unreliable, insecure foreign energy supplies.

The value of the import ticket would theoretically be the differential between the cost of energy in the U.S. versus the cost in the rest of the world. Refiners wanting to import foreign crude would have to secure the tickets from the domestic producers, who earned their tickets by producing domestic energy within the United States.

"A Futures Market?"

An independent market would quickly develop to price these import tickets. Soon there would be a bid and ask price and maybe even a futures market in these tickets.

The U.S. domestic energy price is probably closest to the true market value of anywhere in the world. On the other hand, the OPEC cartel arbitrarily sets the energy prices high for the rest of the world.

Our initial forecast is that the energy import ticket would be worth

60 cents per million BTUs, the differential between the domestic oil price and the foreign oil price.

Effectively, this would subsidize all U.S. domestic energy production 15 cents per million BTUs, using the four to one ratio. This subsidy transfer would keep domestic energy production up and the domestic oil price from rising.

The Threat of Low Oil Prices

Another major benefit of this policy for the domestic oil producers is the removal of the threat of low world oil prices. If OPEC lowers the world oil price, the value of the import ticket would increase. Domestic investors will return their funds to the oil patch with the threat of low oil prices removed, helping to keep domestic production up.

The plan will maintain the level of energy imported into the U.S. at the Presidentially set percentage. If the percentage is set correctly, the price of energy to the U.S. domestic consumer will not increase.

OPEC management has reviewed this proposed plan and acknowledged that it would lower the price of OPEC oil. We contend that OPEC would benefit from this policy because it will provide them a target of a correct world oil price signal. Presently, the cartel has few true signals to help them set the world oil price correctly. They certainly won't set the world oil price on their cost of service.

If OPEC can hold the price equal to what U.S. domestic producers require, the import tickets would have little value. This should be fine with the United States, because the price would then be high enough to maintain our 80% domestic share. However, OPEC will not be able to maintain this U.S. price because other oil sources in the world will then claim part of their market share.

A Privatization Plan

Our plan would privatize the federal government's function of regulating the energy industry of the United States. The Private Energy Stability Commission would collect the import tickets at the point of entry and issue tickets to the domestic energy producers proportional to their production and the maximum energy dependency percentage the President

set for the United States.

The National Energy Stability Policy transfer some of OPEC's economic production rents to the United States and other oil importing nations. Our initial forecast is a reduction in the U.S. oil import bill of $12 to $15 billion a year, or abou . a 25% reduction.

Setting the dependency percentage too low too quickly would jolt the economy with a higher cost energy. Therefore, we recommend the maximum percentage of imports be set initially close to the existing U.S. energy import level of 20%. After use for a year or two, the President would have the added knowledge of the exact import ticket value. The President could then fine tune or adjust the energy dependency percentage up or down, depending on: 1. How much harmony existed in the world, 2. His perception of world oil supply reliability, and 3. The U.S. need for reliable energy supplies to maintain our nation's superpower status.

This policy can work for the United States because we do have other fuel supplies that can be substituted over time for limiting oil imports, i.e., new alternative energy sources, lots of coal and natural gas. The import ticket value will enhance all domestic energy producers.

The primary reason this world energy policy would work for the benefit of the United States is because: "OPEC may own the oil but the United States still owns the energy market."

The world needs two oil prices, one for the U.S. and another one for the rest of the world. The import ticket value will be the differential between these two oil prices.

Another Benefit:

P.S. Implementation of this policy will put Planning & Forecasting Consultants in the same league as Rockefeller, Seven Sisters, Texas Railroad Commission and OPEC when it comes to manipulating world oil prices.

Call (713) 467-4732 for a copy of the P&FC'S Formal National Energy Stability Policy Proposal.

About the Author

Dale Steffes, P.E., founder of Planning and Forecasting Consultants, Houston, Texas, is a gifted observer of the international energy scene. He specializes in independent analyses of market opportunities for major energy producers and users. Mr Steffes' freedom from the strictures which often cause corporate and industry errors in judgment have made his evaluations especially valuable to those executives who understand the merits of a professional outside viewpoint.

Mr. Steffes is a regular columnist in *The Journal of Commerce*.

APPENDIX:

Letter to Dale Steffes From Mr. Subruto, Secretary General
Organization of The Petroleum Exporting Countries
Obere Donaustrasse 93
1020 Vienna II, Austria

Mr. Dale W. Steffes
President
Private Energy Stability Commission 10th March, 1993

Dear Mr. Steffes,

I should like to acknowledge, with thanks, receipt of your letter dated 21st January, 1993, addressed to the President of the United States and copied to me. It was very kind of you to send me that copy.

I assume that you are interested to know OPEC's reaction to your proposal, and it is with this in mind that I write you this letter.

The acceptance by President Clinton of your proposal would have far-reaching implications for OPEC: The immediate impact would be that demand for OPEC oil would be reduced. Furthermore, the price of international crude would decline, and the annual loss for OPEC would, in all likelihood, be higher than the $12 billion per annum estimated in your proposal, as it may be expected that the EC would follow suit. The main effect on OPEC would be that the Organization would have less investable funds for modernization and expansion. Since demand, world-wide, is expected to increase due to a growing world population and higher energy need for development, a decrease in oil supply would result in a higher oil price later on. This roller coaster movement of oil prices is what OPEC tries to prevent, convinced that this would be detrimental to both producers and consumers, including the US I do not know whether you have taken into consideration the effect your proposal, if implemented, could have on others, for instance, on OPEC; as far as our Organization is concerned, the effect would certainly be negative.

Yours sincerely,

Subroto
Secretary General

Testimony Before The U.S. House Of Representatives Committee On Resources Concerning Economic And Employment Implications Of Declining U.S. Oil And Gas Production

February 2, 1996

by

Milton L. Holloway, Ph.D.
President
Resource Economics, Inc.
Austin, Texas

Testimony Before The U.S. House Of Representatives Committee On Resources Concerning Economic And Employment Implications Of Declining U.S. Oil And Gas Production

Mr. Chairman, my name is Milton Holloway. I am President of Resource Economics, Inc. in Austin, Texas. I appreciate this opportunity to speak on the topic of the implications of declining U.S. oil and gas production. I will focus mostly on this matter regarding the Texas economy--a state that has historically produced a third of U.S. oil and gas.

For most of this century the growth of the Texas economy has been driven by oil and gas industry development. The discovery, production, transportation, distribution and refining of these natural resources have been a major source of jobs, income and wealth for Texans ever since Spindletop. The engine of economic growth has shifted, however, and the oil and gas industry is in long term decline.

The long term decline of the oil and gas industry raises a number of public policy questions; both economic and environmental policy are ongoing subjects of debate. These policy debates need to be informed by accurate information about the current economic importance of the industry and the long term prospects for further development of Texas and U.S. resources.

This paper examines two aspects of trends that are underway, with a focus on the conditions of Texas. First, alternative measures of the importance of the industry are examined. Second, the economic importance of increased oil and gas recovery, and of their decline, are evaluated.

Measures of the Economic Importance of the Industry

The usual economic measures of the importance of an industry are value of production and contributions to employment and incomes in the economy. Contribution to incomes is best measured as contribution to Gross Domestic Product (GDP) or, in the case of a state, Gross State Product (GSP). The definition of the industry adopted here includes the production of oil and gas, chemicals and allied products, refining and oil field machinery, referred to here as the "Oil Industry". The production of oil and gas makes up roughly one-half of the Oil Industry employment and contribution to GSP.

The quantity and value of production of oil and gas in Texas have declined dramatically since the peak production year of 1972. Clearly the best years are gone. The table below shows that the current oil production is 43% and gas is 47% of the respective 1972 peaks, or an annual average decline rate of 3.8% for oil and 3.4% for gas over the 22 year period.

Year	Oil (bil.bbl.)	Gas TCF
1972	1.255	8.657
1982	.864	6.210
1992	.609	4.213
1994	.537	4.077

Meanwhile, the Texas economy has been growing. The table below shows that GSP and total non-farm employment continue in the opposite direction from oil and gas production, with current year real GSP and employment at twice the 1972 levels (a factor of 2.03 for GSP and 1.99 for employment).

Year	GSP (Bil. 1994$)	Non-farm Employment (millions)
1972	232.2	3.883
1982	385.5	6.263
1992	445.4	7.268
1994	471.1	7.740

Oil and gas production are only part of the story, however. The economic contribution to the Texas economy is better measured by the contribution to employment and GSP by the entire complex of inter-related enterprises (Oil Industry). The table below shows that the share of GSP increased dramatically in the early 1980s following the Iranian conflict and the subsequent run-up in the world oil price which, in today's purchasing power dollar, was $50/bbl. The Oil Industry share of GSP in 1972 was 16.2%, rising to 24.9% in 1982 (note: the peak was at 29% in 1981), and declining to 12.5% currently. The Oil Industry share of Texas employment was 5.9% in 1972, rising to 8.0% in 1982 and currently stands at 3.9% (see Exhibits 2 and 3 for detail).

	GSP			**Employment**		
Year	Oil Industry (Bil. 1994$)	Total	Oil Industry Share (%)	Oil Industry (millions)	Total	Oil Industry Share (%)
1972	37.6	232.2	16.2	.231	3.883	5.9
1982	95.9	385.5	24.9	.500	6.263	8.0
1992	59.1	445.4	13.3	.313	7.268	4.3
1994	58.0	471.1	12.5	.303	7.740	3.9

The rise and fall of the Oil Industry contribution to the Texas economy is highly correlated with price of oil. In 1994 purchasing power dollars, the price of oil today is slightly above the 1972 price that prevailed before the Arab Embargo (see Exhibit 1). The price of oil today in constant purchasing power dollars is about $3.00 per barrel higher than the pre-Embargo level; the share of GSP is lower than the pre-Embargo level by 3.7% (12.5% compared to 16.2%). As a result, the Oil Industry has lost a significant amount of its historical economic

	Oil Price	
Year	Current	1994$
1972	3.48	12.34
1981	34.65	53.42
1994	15.16	15.16

importance to the Texas economy, but the dramatic change--the markedly different period--was the ten-year period following the Arab Embargo. The industry is clearly in long term decline, but changes in its relative importance to the economy are best captured by comparing today with the pre-Embargo era, rather than conditions accompanying the unusual events that followed two world oil crises during the 1970s.

A Measurement Footnote

The above comparisons of today's Oil Industry contribution to the economy, in comparison to the pre-Embargo era, have an important footnote. The long term, technology-based restructuring of the U.S. economy has left our economic data series lacking. The now common and growing practice of hiring contract workers in place of regular employees (out-sourcing) that is taking place in all major industries has been underway in the Oil Industry for at least a decade. The effect of this practice on economic statistics is to understate the direct employment contributions of the industry. The summary table above shows that the Oil Industry share of GSP is now 77.2% of the 1972 level, while the employment share is now 66.1% of the total 1972 level. Part of this more rapid employment share decline is due to increased labor productivity, but some of it is also due to the practice of contract hiring. A 1990 study of the U.S. refining and petrochemical industry, for example, indicates that between one-third and one-half of the petrochemical industry workforce is comprised of contract labor.[1] Further, the practice intensified during the 1980s, resulting in perhaps a 15% to 20% increase in the shares of contract workers.

[1] "Managing Workplace Safety and Health: The Case of Contract Labor in the U.S. Petrochemical Industry," John Gray Institute, Lamar University System, July, 1991.

The employment statistics are currently tied to the Standard Industrial Code (SIC) classification system used to report to all government agencies. The comparisons of employment by SIC fails to adjust for this contract employment phenomenon. Much of the contract labor is captured in the growth of the service industry rather than growth in the traditional industry employment. Our employment agencies (Texas Employment Commission and Bureau of Labor Statistics) are aware of the problem but so far no one knows just how important the distortion may be. In short, this data series problem amounts to an understatement of the direct employment in the Oil Industry when compared to earlier periods; the decline in Oil Industry employment share is less severe than the data show.

Prospects for Slowing the Oil Industry Decline

The oil and gas production part of the Texas Oil Industry is certainly in long term decline although this is not necessarily true of the chemical, refining and oil field machinery parts of the industry. I focus here on the oil and gas production outlook and the prospects and importance of slowing the decline in primary energy production.

Exhibit 4 summarizes two scenarios of the Texas energy balance, comparing the period from 1970 through the early 1990s, with projections to the year 2020.[2] The first scenario compares the total Texas energy consumption with primary energy production, which of course is mostly oil and gas. The second scenario is the energy balance given maximum application of advanced recovery technologies and aggressive contributions from renewables (see Exhibit 5 for supply projections).

Texas Primary Energy Supply

Year	Current Trends (mmbd)	Advanced Technology (mmbd)	Increase from Advanced Technology[3]
1970	7.56	7.56	
1980	5.90	5.90	
1990	4.48	4.48	
2000	3.86	4.40	.54
2010	3.15	4.33	1.18
2020	2.61	4.06	1.45

[2] Holloway, Milton L., et al., "Texas Long Term Economic and Energy Outlook: 1990 - 2040," Appendix to State of Texas Energy Policy Partnership, Railroad Commission of Texas, Austin, March, 1993.

[3] The current trends already include a great deal of advanced technology oil and gas production by 1995. Some unknown quantity is also included in the 1990 production numbers. For example, Union Pacific Resources Group has just completed its one-thousandth horizontal well since 1988 in the Austin Chalk where production has reached 529 million cubic feet equivalent per day in December, 1995. (Source: Union Pacific Resources Group, Press Release, January 12, 1996).

The supply side of advanced technology contributions includes enhanced oil and gas recovery, as well as application of 3D seismic, horizontal drilling and targeting resource development in known fields. This maximum effort cannot be expected to increase Texas' primary energy production above today's levels; the best prospects are to slow the decline to a near stable level of 4.3 mmbd for a 10 to 15 year period. How feasible is this level of production increase above the current trend? How much might the increase be worth to the Texas economy?

What are the employment and GSP impacts of increased oil and gas production brought about by enhanced recovery through highly efficient applications of knowledge and technology-based initiatives? Assuming a $20 oil price equivalent for increased oil and gas production, and one-half of the rather optimistic year 2010 contribution shown in the table above (1.18 mmbd / 2 = 0.59 mmbd), the value of primary energy output would amount to $4.3 billion per year. The direct employment efforts of this increment would amount to 25,000 jobs (5.8 jobs / mil $ of output) directly, and 88,000 jobs throughout the economy. The GSP effect of such an increase would amount to $6.7 billion annually, a 1.1% increase in GSP. These impact estimates also approximate the expected decrease in Texas economic contribution from oil and gas industry production that will occur over the decade of the 1990s under current trends.

The likelihood is that additional production of Texas oil and gas from advanced technologies will only happen because of increased efficiencies and/or public sector help through favorable tax treatment for R&D and enhanced recovery investments. The world oil price is not likely to rise significantly in the foreseeable future.

Senator Dominci's proposed tax revisions of a few years back would no doubt make a difference. The provisions of that bill, along with proposed additional coverage of advanced technologies, were estimated to amount to about $4/bbl of oil for enhanced recovery technology-based production from new reserves. My own estimates of the effects of that legislation were that U.S. production of crude oil could be held at about 6.0 mmbd for the period of 2000 and beyond for a decade or so.[4] The additional production effects for crude oil alone were estimated to contribute 0.35 mmbd of additional U.S. production lasting a decade or more (see Exhibit 6). One could think of this legislation as a one-third/two-thirds public/private sector investment in the formation of additional U.S. oil reserves. Whether the public investment would be repaid by the outcome depends on one's view of the marginal net benefits of decreased U.S. oil imports. The success of the Gulf War of 1990 would lead one to believe that national security risks of an increment of U.S. oil imports is non-existent, or insignificant. However, this was one experience of a successful U.S. military intervention to secure world oil supply. Other interventions may be more costly.

The most likely way for these additional resources to come to market in the current economic climate is through increased efficiencies and the opening of additional public lands to exploration. Examples of increased efficiencies come through highly efficient application of

[4] Holloway, Milton L., "An Economic Analysis of the Enhanced Oil and Gas Recovery Tax Act of 1989 (S.828)," The Bureau of Economic Geology and The University of Texas at Austin, August, 1990.

technology and industry knowledge, such as that ascribed to Union Pacific Resources Group (UPRG) as reported in the recent issue of The Wall Street Journal.[5] UPRG has been the most aggressive U.S. firm using horizontal drilling technologies to tap the unusual deposits of oil and gas in the Austin Chalk. This company is not following the trends of focusing on foreign resource development and is currently earning a return on investment that is twice the industry average. UPRG reports a 10% return on investment compared to 4% for the industry average.

The very recent experience of major U.S. companies in U.S. oil and gas enterprises is not encouraging. The DOE survey of companies in their Financial Reporting System (FRS Companies) shows that return on investment fell to long term lows of less than 5% (Net Income to Stockholder's Equity) in 1992.

In summary, the value of the oil and gas industry to the Texas economy is certainly less than it has been historically. However, the current oil and gas resource contribution to the economy of Texas should be put in historical perspective with the period prior to the Arab Embargo, rather than the abnormal period following the two world oil crises. The industry is still quite important to the state's economy, and there are favorable prospects for highly efficient incremental production that will slow the long term decline. Each additional billion dollars of oil and gas production will contribute 20,000 jobs in the Texas economy. Public policy debates need to focus on encouraging increased efficiencies of finding and producing these economic reserves. Public policy needs to be supportive by providing access to restricted lands, funding R&D and maintaining balanced tax policy relative to other economic investments.

[5] Peter Fritsch, "Home Alone: A Union Pacific Unit Prospers by Drilling Lots of Domestic Wells," The Wall Street Journal 23 Jan. 1996: A1.

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EXHIBIT

OIL INDUSTRY (Prod, Ref, Chem, & Mach)
SHARE OF TEXAS GSP AND EMPLOYMENT

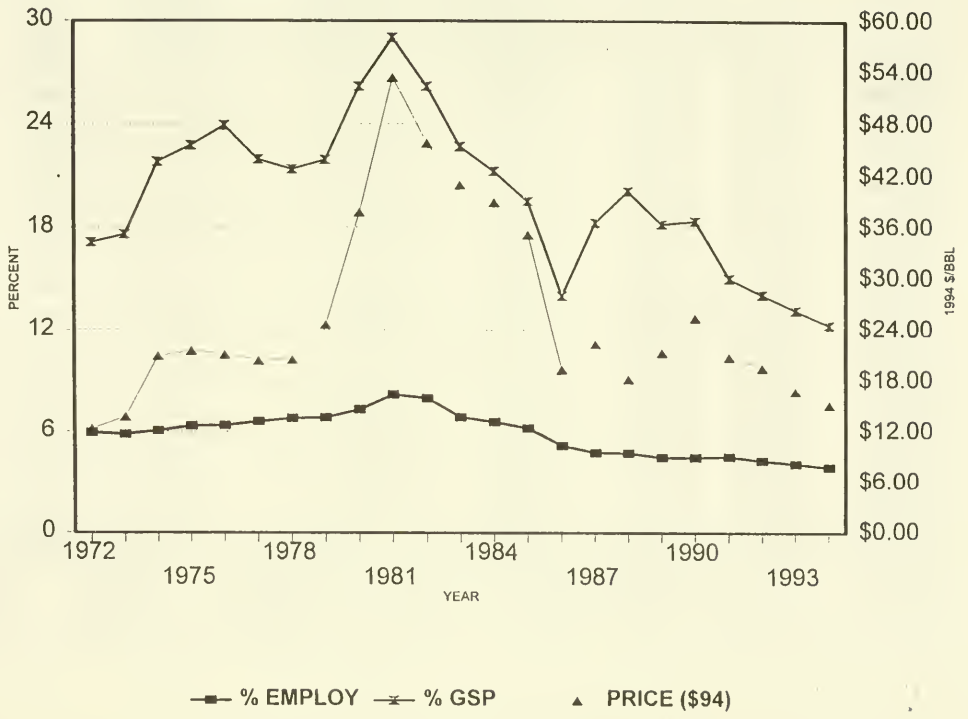


EXHIBIT 2. Texas Oil and Gas Industry Gross State Product (Millions of 1994 Dollars)

Year	MINING (SIC 10-19)	CHEMICALS & ALL PRD (SIC 28)	PET & COAL PROD. (SIC 29)	Oil Field MACHINERY (SIC 35 PART)	SUM	GROSS STATE PRODUCT
1972	$20,235	$8,118	$5,016	$4,206	$37,576	$232,230
1973	$22,157	$8,616	$5,637	$4,619	$41,028	$246,635
1974	$33,502	$9,251	$4,954	$5,005	$52,712	$255,251
1975	$34,575	$9,956	$5,670	$5,900	$56,100	$260,501
1976	$37,039	$11,994	$7,085	$6,541	$62,659	$277,060
1977	$39,270	$12,200	$7,859	$7,370	$66,699	$320,949
1978	$41,252	$11,713	$7,057	$8,358	$68,380	$338,292
1979	$41,379	$10,977	$10,770	$8,827	$71,953	$344,971
1980	$60,934	$9,659	$8,427	$9,480	$88,501	$357,254
1981	$72,964	$9,894	$9,349	$12,118	$104,324	$388,379
1982	$68,301	$8,956	$7,745	$10,971	$95,973	$385,535
1983	$58,718	$9,218	$9,071	$6,541	$83,548	$383,566
1984	$60,452	$9,458	$6,312	$7,336	$83,558	$405,491
1985	$55,895	$8,744	$7,143	$7,195	$78,977	$414,523
1986	$31,316	$9,523	$8,277	$5,379	$54,495	$390,087
1987	$30,929	$12,414	$7,538	$4,919	$55,800	$387,793
1988	$30,969	$16,904	$12,513	$5,974	$66,360	$410,138
1989	$27,984	$16,736	$11,910	$6,569	$63,197	$421,144
1990	$34,250	$15,770	$12,363	$6,773	$69,156	$434,000
1991	$28,777	$12,705	$11,846	$6,309	$59,637	$432,100
1992	$28,665	$12,845	$11,598	$6,016	$59,125	$445,427
1993	$28,028	$12,811	$11,456	$6,014	$58,309	$456,767
1994	$28,050	$12,560	$11,327	$6,014	$57,952	$471,140

Source: U.S. Bureau of Economic Analysis

EXHIBIT 3. Texas Oil and Gas Industry Employment (Thousands of Jobs)

Year	MINING (SIC 10-19)	CHEMICALS & ALL PRD (SIC 28)	PET. & COAL PROD. (SIC 29)	Oil-Field MACHINERY (SIC 35 PART)	NON-OIL	OIL INDUSTRY SUM	TOTAL (Non Farm Wage & Sal
1972	103.5	61.8	37.9	28.2	3,651.2	231.4	3,882.6
1973	109.2	65.0	37.3	30.8	3,897.2	242.3	4,139.5
1974	122.3	67.4	38.9	35.7	4,094.4	264.3	4,358.7
1975	133.2	68.1	40.8	41.9	4,178.9	284.0	4,462.9
1976	139.9	71.7	42.9	44.6	4,383.5	299.1	4,682.6
1977	159.3	75.8	43.3	46.6	4,579.4	325.0	4,904.4
1978	182.7	78.3	43.3	53.9	4,908.9	358.2	5,267.1
1979	203.3	79.5	42.4	58.6	5,213.1	383.8	5,596.9
1980	241.7	81.0	40.8	64.8	5,419.9	428.3	5,848.2
1981	296.1	83.4	46.3	80.7	5,672.1	506.5	6,178.6
1982	303.2	82.0	42.8	72.1	5,762.6	500.1	6,262.7
1983	263.0	77.6	43.9	41.9	5,764.8	426.4	6,191.2
1984	269.0	77.6	41.2	39.8	6,060.1	427.6	6,487.7
1985	259.1	78.1	37.0	40.1	6,244.5	414.3	6,658.8
1986	205.1	75.0	34.0	28.0	6,217.6	342.1	6,559.7
1987	181.5	74.8	32.3	22.4	6,201.5	311.0	6,512.5
1988	184.2	77.8	29.3	25.5	6,359.4	316.8	6,676.2
1989	173.9	80.7	28.8	23.8	6,531.0	307.2	6,838.2
1990	179.4	84.0	29.2	25.8	6,775.4	318.4	7,093.8
1991	180.7	87.9	30.7	27.5	6,848.1	326.8	7,174.9
1992	170.2	86.4	30.2	26.3	6,954.9	313.1	7,268.0
1993	166.0	86.2	29.8	26.3	7,173.0	308.3	7,481.3
1994	162.7	84.5	29.5	26.3	7,437.4	303.0	7,740.4

EXHIBIT 4. PRIMARY ENERGY CONSUMPTION
AND PRODUCTION IN TEXAS: 1990- 2020

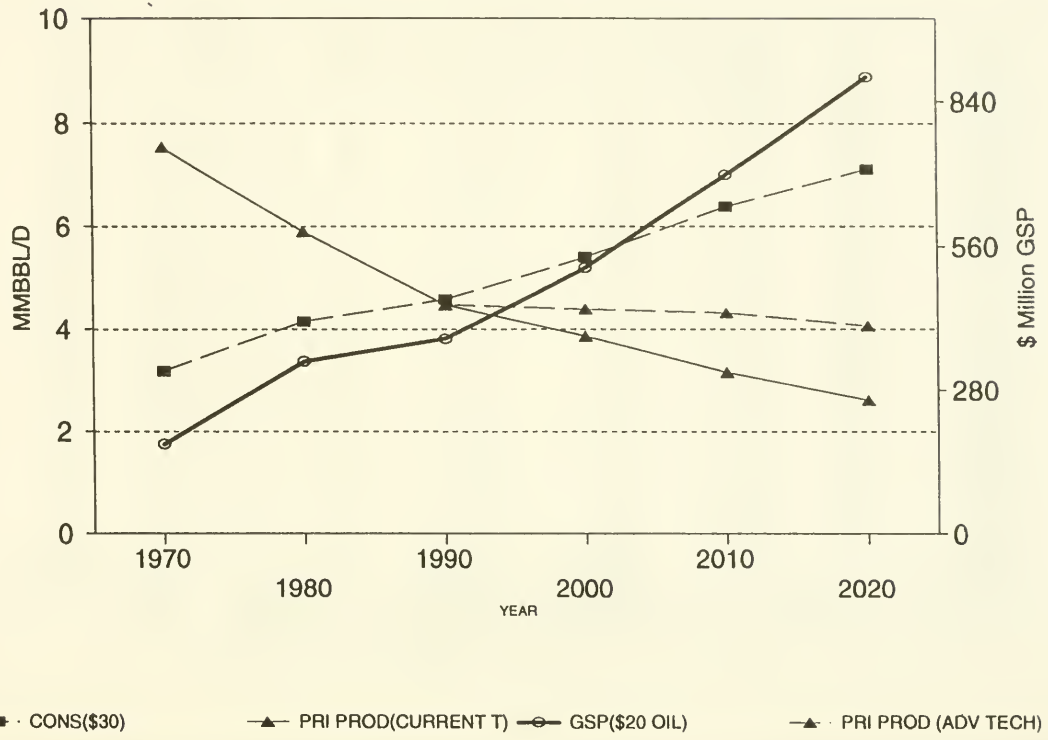


EXHIBIT 5. TEXAS ENERGY SUPPLY TRENDS

SUPPLY: CURRENT TECHNOLOGY (MMBBL/D)

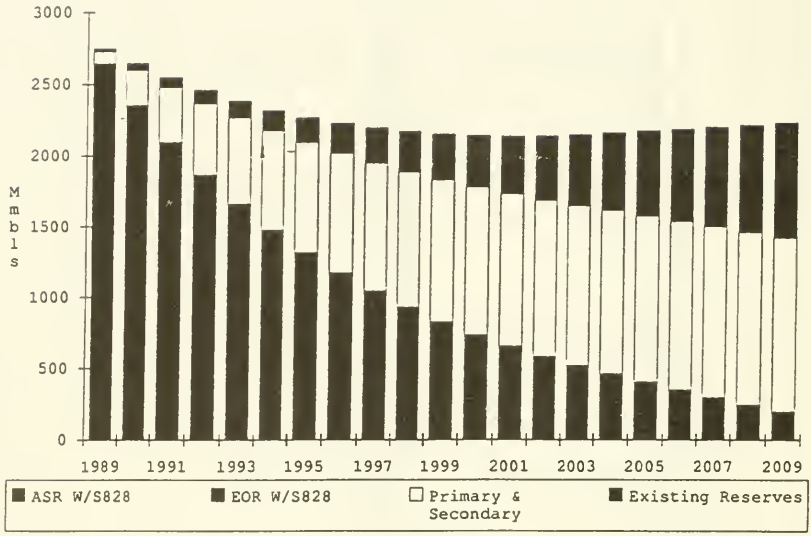
YEAR	NATURAL GAS	CRUDE OIL	COAL	WIND &SOLAR	URANIUM	TOTAL
1970	3.40	4.04	0.01	0.00	0.09	7.56
1980	2.44	3.13	0.19	0.00	0.14	5.90
1990	1.83	2.28	0.31	0.02	0.05	4.48
2000	1.45	1.82	0.39	0.04	0.16	3.86
2010	1.06	1.37	0.48	0.07	0.16	3.15
2020	0.77	1.02	0.57	0.11	0.15	2.61

SUPPLY: ADVANCED TECHNOLOGY (MMBBL/D)

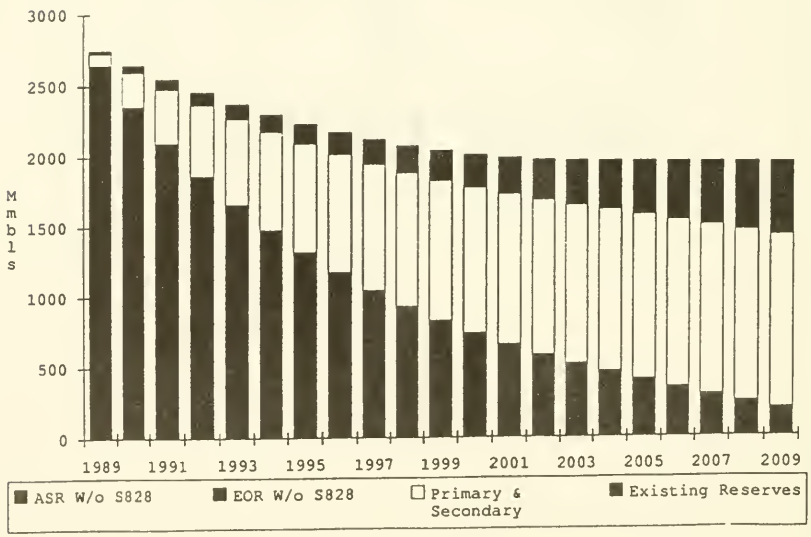
YEAR	NATURAL GAS	CRUDE OIL	COAL	WIND &SOLAR	URANIUM	TOTAL
1970	3.40	4.04	0.01	0.00	0.09	7.56
1980	2.44	3.13	0.19	0.00	0.14	5.90
1990	1.83	2.28	0.31	0.02	0.05	4.48
2000	1.75	2.16	0.39	0.04	0.06	4.40
2010	1.66	2.04	0.48	0.07	0.07	4.33
2020	1.43	1.87	0.57	0.11	0.08	4.06

EXHIBIT 6

Additions to Production from Additions to Reserves With S.828



Additions to Production from Additions to Reserves W/o S.828



Trends in Oil and Gas Employment Among America's Oil Cities

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Field Oversight Hearings
Houston, Texas
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Trends in Oil and Gas Employment Among America's Oil Cities

I would like to thank Mr. Don Young, Chairman of the Committee on Resources, and Mr. Ken Calvert, Chairman of the Subcommittee on Energy and Mineral Resources, for this opportunity to submit testimony on the employment implications of declining U.S. oil and gas production. I must state that the views expressed are strictly my own, based on my experience and research as a professional economist, and they do not necessarily reflect the views of the Federal Reserve Bank of Dallas, the Federal Reserve System or its Board of Governors.

As a Houston-based regional economist employed by the Federal Reserve, I have developed a strong interest in the relationship between oil and gas and the economy of the Texas and Louisiana Gulf Coast. Despite the problems of the oil and gas industry in recent years, energy remains a powerful economic force in this region. The vast petrochemical and refining belt that runs from Corpus Christi, through Victoria, Brazoria, Houston, Beaumont, Lake Charles, Baton Rouge, and into New Orleans is one of our nation's most important industrial assets. The Gulf of Mexico has recently emerged as the nation's most active basin for oil and gas exploration. Houston remains the world's center for new energy technology and engineering. Most estimates continue to place the energy dependence of Houston's economy at about 60 percent of its economic base.

Table 1 shows the well-known and dramatic decline in employment in U.S. oil and natural gas production and exploration since 1981, as industry employment fell 54.5 percent between 1981 and 1994. Much of this decline, in retrospect, resulted from errors of judgment made in the 1970s about global oil and gas markets. Errors were made by OPEC as it drove prices to unsustainable levels, and as it under-estimated consumer conservation and the potential development of non-OPEC oil basins. Also, much United States foreign and domestic policy was predicated on the notion that the US would run out of oil by the turn of the century, and price controls delayed the market's response to OPEC price increases. Between 1981 and 1987 we reversed a build-up in the oil industry that must be blamed on a series of policy errors made during the previous decade.

However, as oil and natural gas prices have stabilized since 1987, domestic employment in oil and natural gas has continued to decline. Downward pressure continues on oil-related jobs, and since 1987 Table 1 indicates an 18.8 percent decline in domestic production, a 14.6 percent fall in oil services, and a 1.1 percent increase in oil and gas machinery. Combined employment in these industries fell 15.2 percent from 1987 to 1994.

I would like to focus my remarks on the post-1987 period, and on the reasons for recent job decline. I would also like to focus on the growing share of urban jobs associated with the oil industry, located in cities such as Houston, Tulsa, Midland, and New Orleans. In 1981, according to the Bureau of Economic Analysis, 72 percent of the wages, salaries, and employer-paid benefits associated with oil and gas production and services came from U.S. metropolitan areas. By 1993, this figure grew to 77.3 percent of oil industry payrolls. The

growing share of earnings reflects both higher pay scales and an increasing percentage of oil jobs shifting to the city. Employment trends are difficult to track by metropolitan area or by region, but I will offer figures that illustrate the growing concentration of urban jobs in the oil industry. This shift results from basic trends in oil technology and industry-wide cost reduction.

Trends Shaping the Industry

Employment levels in domestic oil and gas are being shaped by a number of factors.

-- Oil and natural gas prices remain low compared to a decade ago. OPEC's cartel pricing now recognizes oil-on-oil competition from new basins around the world, and its pricing remains low enough to discourage further exploration. Domestic revenues for producers are constrained by oil prices near $15 per barrel and natural gas prices under $2 per thousand cubic feet. This in turn places downward pressure on wages and total employment.

-- Volatility of energy prices in recent years has played a role in restraining industry job growth. For decades the price of oil and gas was highly stable, with oil prices controlled by the Texas Railroad Commission or OPEC. Stability was the norm, with occasional price spikes caused by refinery strikes or OPEC price increases. Since 1987, and despite OPEC's best efforts, prices now fluctuate often and widely.

Volatility restrains activity if producers are adverse to price risk, or it raises the cost of business as producers hedge against this risk. More important, however, it now shapes every oil company by forcing it to reduce fixed cost. It is now important to be able to quickly expand *and contract* the level of activity in response to energy price changes. In particular, risk is shifted to temporary employees and contractors, and fewer workers are hired directly by the oil or gas company. Outside suppliers of accounting, legal, janitorial and other services, in turn, can spread this oil-based risk by having clients in other, non-oil industries.

-- In the 1990s, many of the nation's largest producers shifted their emphasis away from domestic operations, and moved exploration overseas. Increasingly, the U.S. on-shore is perceived as drilled out, and offshore opportunities are confined to the western Gulf of Mexico. Large companies in need of large quantities of oil to replace their current inventory of reserves have turned attention elsewhere. Among the large integrated producers, in particular, restructuring and downsizing of staff associated with domestic oil production was a hallmark of the early 1990's.

The net employment impact of overseas exploration is difficult to gauge. Certainly, the best management and technical skills are retained by integrated companies, and perhaps kept at headquarters even as they are reassigned to foreign projects. In contrast, the sale of

numerous domestic properties has opened opportunities for independents willing to purchase and exploit them. In recent years, new technologies greatly improved the economics of developing reserves in mature fields such as those in the United States. As Table 2 shows, the share of overhead and management workers in oil production (data which include most of the industry's integrated headquarters) fell steadily throughout the oil bust, but the mix of production and nonproduction workers has stabilized at a 50-50 mix since 1987.

-- Finally, improved management and technology is reshaping the industry. Important new tools, such as 3-dimensional seismic and continuous downhole measurement have lowered cost, reduced risk and reduced the number of wells drilled to replace reserves. At the same time new technologies have widened the range of prospects available to the industry. The current interest in the Gulf of Mexico, for example, both in deep water and in the subsalt regions, is largely a product of technology.

Figure 1 shows that industry wages have been rising steadily relative to the price of oil, implying strong productivity gains in the oil industry since 1985. The gains would look even stronger relative to the price of natural gas. Technology has played a major role in improving oil industry productivity.

Technology is felt most directly within the oil service segment of the industry. The industry's mix of technical and management workers has risen in recent years, as the share of production worker jobs has slowly fallen since 1987 from 81.2 to 79.9 percent. Between 1981 and 1987, in contrast, the share of production workers in oil services fell very quickly. (See Table 2.) Despite downsizing and restructuring of white-collar employment throughout the oil industry, new technology -- and the demands it makes for employees able to manage and to apply it -- is keeping this segment of the industry relatively healthy.

Shift of Jobs to Cities

An important trend has been the shift in oil-related jobs into the cities, particularly into Houston. To look at this transfer of jobs to urban areas, I selected 27 cities with a significant concentration of oil-based employment in the 1980s. The cities were chosen from annual headquarters listings of public companies from the *Oil and Gas Journal*, corporate listings of *Standard and Poor*, and from cities with a concentration of oil service or machinery employment. The list includes the traditional oil cities such as Houston, Lafayette, Bakersfield and Midland, plus corporate and financial centers such as New York, Chicago and Los Angeles.

By 1993, these 27 cities were home to 45.9 percent of U.S. oil-related jobs, an increase from 42.1 percent in 1987. These figures (assembled from *County Business Pattern* data, and using slightly different definitions from Table 1) show an overall U.S. decline of 18.7 percent in the upstream oil sectors from 1987 to 1993, while employment among the 27 oil cities fell only 11.5 percent.

The top five cities and their employment are listed in Table 3. The top five cities in employment were unchanged from 1987, although they fared differently throughout the 1987-93 period. Houston added 4,600 jobs after 1987, and its share of employment among the 27 oil cities jumped from 28.5 percent to 35 percent. Tulsa and Dallas lost jobs, but held on to employment better than the typical oil city. Midland and New Orleans both fared worse than average.

Our preliminary examination of the location of urban oil jobs shows that oil companies increasingly want access to skilled labor and to specialized oil industry suppliers. Access to the oil fields is not a factor for these city-based oil jobs, and oil companies are willing to pay a premium in wages to be in these cities. The best predictor of where a producer or headquarter facility will locate is the number of other producers or headquarters already in the city. Service companies similarly seek other service companies, plus they want access to their customers in corporate headquarters.

This location pattern is a textbook case of urban industrial clustering. It is a pattern widely observed in many other industries, especially high technology, where specialized skills and inputs are required. It is surprising in the context of oil only because we think of it as a resource-based industry. For the urban component at least, the direct ties to resources are being broken. Improved communications and deeper regional financial markets make this possible, but the key factor building these urban clusters is the oil industry's growing need for technology and specialized skills.

These clusters also make it more difficult to track the employment effects of oil. The growing industry reliance on outside suppliers and temporary help was discussed above. As more work is outsourced, we find the influence of regional oil increasingly spread through other industries -- accounting, construction, legal services, etc. These trends are not unique to oil, but the power of the forces driving outsourcing in this industry -- price decline, price volatility, new technology -- may make it more widespread than other industries.

Consider Figure 2, for example. The chart shows the change in recent years in oil-based employment in Houston. The top lines show recent growth in oil services and machinery in the city, as these industries expanded 4.3 percent and 7.1 percent respectively in 1995. The bottom line shows a continued decline throughout 1995 in the large base of producer and headquarter employment in Houston. The integrated oil companies make up a significant part of the jobs in this producer sector, and profits were very strong for these companies last year. The *Wall Street Journal*'s list of integrated companies, for example, showed that profits doubled in the second quarter of 1995 compared to the year before. Yet direct employment remains flat. We know little about the practical effects of outsourcing, consultants, temporary help and other employment innovations on the oil industry, but they surely play a significant role in the poor job performance as charted in Figure 2.

Conclusions

-- Since 1987, we have seen most segments of the American oil industry stabilize and return to financial health. Technology in American oil services remains the envy of the world. Oil services and machinery, combined with the operations of U.S. integrated companies, give U.S. oil a global reach.

Domestic employment, or even its prospects for future growth, is not always the best indicator of the health of an industry. Restructuring, downsizing, outsourcing and international operations can be expected to remain as part of the oil industry's future. However, the same can be said of U.S. manufacturing as well. Measured on a net basis, the world-class U.S. factory system is not expected to ever create more U.S. employment. This is not because anything is *wrong* with manufacturing. On the contrary, jobs are lost to high productivity trends that sustain growing output with no new jobs. Technology similarly shapes U.S. oil and gas..

-- The growing knowledge-based segments of American oil, in headquarters and research facilities, continues to grow as a share of U.S oil employment. Classic industrial clustering, along lines widely seen in knowledge-based high-tech industries, continues to build this important urban segment of American oil. Firms seeking these clusters are willing to abandon the oil fields and financial markets in return for specialized industry skills, knowledge and suppliers. Houston has been the chief beneficiary of this trend, and continued clustering in Houston and in other cities is likely.

-- Finally, as these urban clusters of oil employment grow, we know less and less about the impact of oil on regional and national economies. Outsourcing, contractor employees, temporary employees and consultants all provide exceptions to the direct employment measures available to us through routine data collection. I hesitate at this point, as a data consumer and not a data producer, to recommend further data collection. I do know, however, that we need to know more about the fundamental employment trends now shaping labor markets. If the data collection process is supposed to guide policy at some point, we need to supplement the current knowledge base. Special studies of the employment impact of recent labor trends would be an invaluable start. For all of the reasons discussed above, the U.S. oil industry would provide an excellent case study.

Table 1.
Employment in Oil and Gas Production, Services and Machinery
(Thousands of Jobs)

Year	*Production*	*Services*	*Machinery*	*Total*
1973	135.6	134.6	45.4	315.6
1981	254.3	430.2	122.3	806.8
1987	199.4	197.0	36.4	432.8
1994	161.9	168.3	36.8	367.0

Source: Bureau of Labor Statistics, *Employment and Earnings*

Table 2.
Share of Production Workers in Total Oil Employment
(Percent)

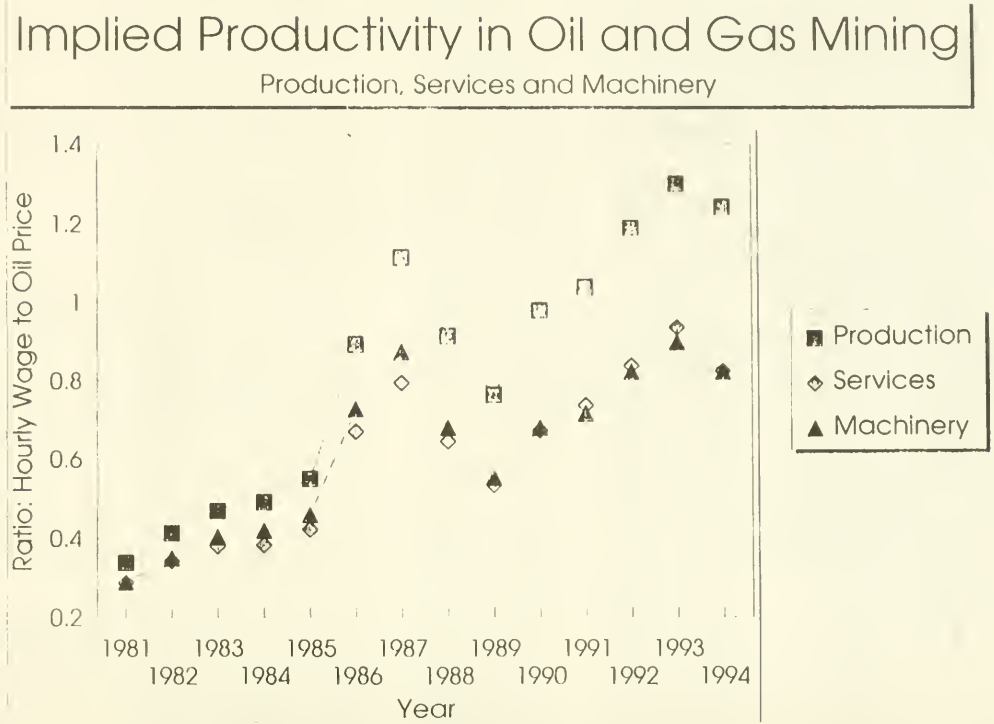
Year	*Production*	*Services*	*Machinery*
1981	43.7	86.0	69.5
1987	48.6	81.2	58.5
1994	49.6	79.9	66.5

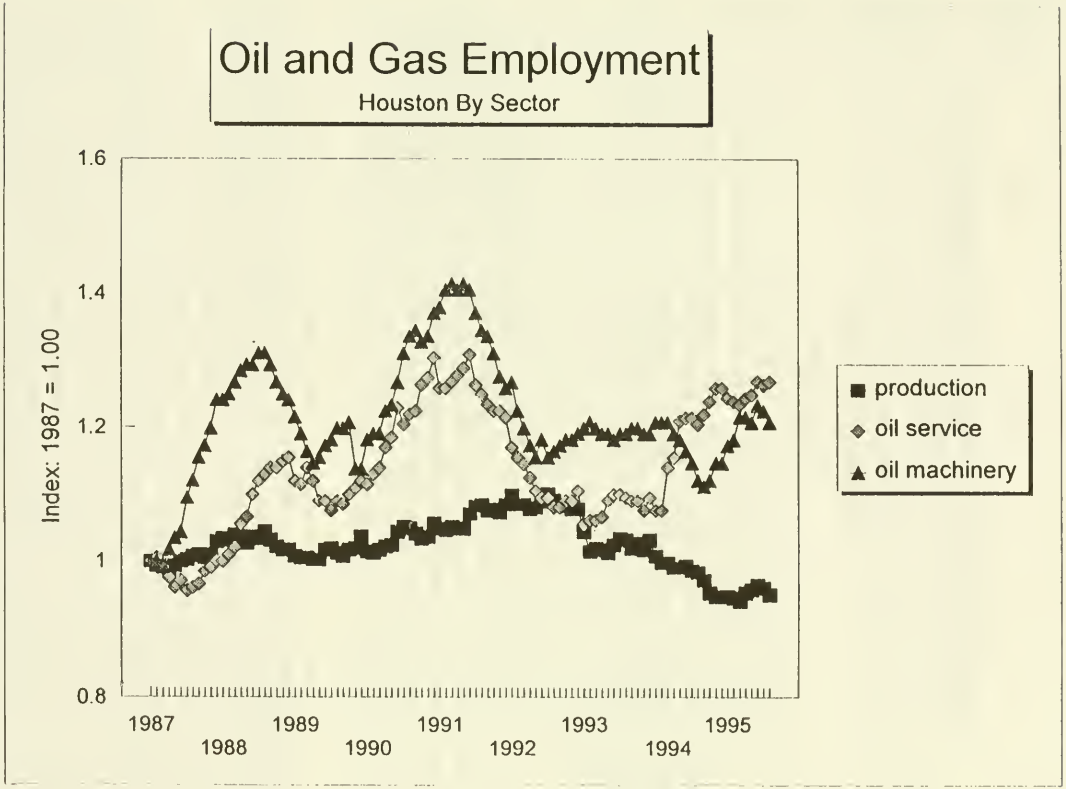
Table 3.
Employment in Major US Oil Cities
(Number of Jobs)

City	*Producers*	*Services*	*Machinery*	*Headquarters*	*Total*	*Percent*
Houston	11,374	13,900	8,388	23,966	57,628	35.1
Dallas	4,243	3,902	2,735	6,291	16,979	10.3
Tulsa	2,533	1,297	1,205	4,421	9,747	5.9
Midland	3,001	4,813	350	2,125	9,590	5.6
New Orleans	2,074	2,929	353	3,459	9,136	5.6
Other 22 Cities	16,390	21,781	3,271	20,909	61,649	37.5

Note: Parts may not add to total due to estimates where nondisclosures occur.

Source: US Bureau of the Census, *County Business Patterns*


Implied Productivity in Oil and Gas Mining
Production, Services and Machinery
Ratio: Hourly Wage to Oil Price
1.4
1.2
1
0.8
0.6
0.4
0.2
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
Year
Production
Services
Machinery


Oil and Gas Employment
Houston By Sector
Index: 1987 = 1.00
1.6
1.4
1.2
1
0.8
1987
1988
1989
1990
1991
1992
1993
1994
1995
production
oil service
oil machinery

Testimony

by

Carole Keeton Rylander, Chairman, Railroad Commission of Texas

before the

Committee on Resources

U.S. House of Representatives

February 2, 1996

Chairman Young and Honorable Members of the Committee, I am Carole Keeton Rylander, Chairman of the Texas Railroad Commission, and it is a privilege to speak before you today. I'm a believer in energy independence. I'm a believer in a strong national defense. I'm concerned when for the first time in history last year we imported over 50% of our crude. I don't want us to be held hostage by Iraq or Iran or any of the ayatollahs. I want to back out that foreign crude with our Texas oil and natural gas -- it's available, its affordable, it's acceptable, and it's American.

I want to address the status of the oil and gas industry in Texas. Sometimes, as events rush by, our vision is blurred by the speed of change. This lack of focus may make us believe that we can talk about the status of the oil and gas industry without talking about the economic status of Texas. To give you my clearest picture of the oil and gas industry, and I want to paint it as clearly as I can, this means discussing the recent economic recession in Texas. I could tell you that we have 80,000 wells that have stopped producing. I could tell you that we have another 90,000 wells that produce less than three barrels of oil a day, or that our average production is less than 8 barrels a day, but you will hear numbers like this from many people.

Every year from 1980 until 1986, the oil and gas industry added over $100 billion a year to the Texas economy. In the best year since 1986 the same industry put only $66 billion into Texas. What happened? In 1986, the price of oil and gas collapsed, falling temporarily to a low of $9 a barrel from over $29 the year before. This price collapse has pulled almost $400 billion from the economy of this state since 1986. If this collapse had not occurred, figuratively speaking, every man, woman and child in this state would have had $20,000 more. As this money vanished from the expected revenue stream, banks began to collapse. People in the financial community lost jobs. Real estate markets began to contract, and real estate people lost jobs. Others lost their homes. So much money was pulled from the tax revenue stream in Texas that we faced a crisis in financing our schools that the Legislature is still struggling with today. Property taxes escalated dramatically to try to continue to educate our children, and more people lost their homes. The lives of virtually every person in this state was affected by this recession, either directly or indirectly. And it was caused by the fall of a single domino, the collapse of oil and gas prices, followed by the downturn in the oil and gas industry itself.

Now, I only mention these things to attempt to clarify to you the importance of this industry to Texas. But this is also important to you in your leadership positions. Why? Remember the bank collapse. The savings and loan bailout may cost taxpayers $350 billion, and you are the ones who have to find the resources to fix this. And the contraction in revenue associated with the oil and gas collapse was a major force in the bank failures. This is much more than a regional issue.

The Texas Railroad Commission is trying to help. First, we have just undergone the most significant reorganization in our 104-year history. We are modernizing and streamlining our operations, with an increased emphasis on service to the people of this state.

We are attempting to create the least costly regulatory process of any state. Not only will this help preserve marginal wells, and increase revenue to producers, it also will enable Texas to better compete for investment money, since the costs of doing business would be reduced. With the decline in our ability to produce oil from any given well, we are increasingly focusing on this question: do we need the same kind of regulation? Our answer is, we believe that we may be able to simplify or eliminate much of our current oil regulatory program, by acknowledging the decline in the ability of our wells to produce. This partial deregulation program, that I fully support, is currently being considered by the Railroad Commission, and the effect, if implemented, would save the Commission $300,000 a year in reduced costs, and save the industry over $40,000,000 a year in reduced regulatory compliance costs. The savings would come from reduced tests on wells, reduced paperwork, the elimination of meaningless production limitations, and so on. The bottom line is that our mechanisms were designed to protect wells from each other when Texas wells could make over a thousand barrels a day. Today we have 90,000 wells that make less than three barrels a day, and we no longer need these protections.

But most important, we have created or participated in a number of incentive programs. I want to discuss in detail one very successful incentive -- high-cost gas wells -- because the Federal government played a role in its success. Texas began to waive severance tax payments on these wells in 1989, and in 1991 we had this state incentive combined with a Federal tax credit on the production from these wells. (See Tables 1 and 2)

The gas production from wells drilled under this incentive since 1989 is worth over $22 billion to the economy of Texas. We have had 7,938 high cost wells drilled under this program. The value of drilling the wells is worth another $18 billion to the economy of Texas and the nation. While we have averaged 1,100 gas wells a year, you can appreciate the cumulative impact of the incentive by noting that only 143 wells were drilled in the first year, followed by 516 in the second. Then the Federal program started and ran for two years. During the joint incentive 3,316 wells were drilled. There was a decline in 1993 with the end of the Federal program. But then, as we approached the end of the first state program, the number of wells increased again.

These numbers tell a simple, straightforward story: economic incentives work. And let me be clear that they work for everyone. Last year, 4% of all the natural gas used in the United States came from these 7,938 wells. We can estimate that these wells have resulted in the payment of over a billion dollars in state and local taxes, not to mention the substantial Federal taxes paid. What did it cost? The state waived $568,669,876 in severance taxes on these wells, certainly a sizable investment. Is this corporate welfare? Absolutely not. There is a difference in allowing someone to keep money they make rather than taking it away from one entity to give it to another. In this case, Texas invested $568 million to create $22 billion in wealth for the economy. Just remember in Texas we considered investing $500 million in the Superconducting Super Collider, a seemingly wonderful investment because it would add $5 billion to the economy of Texas! This high-cost gas incentive has already had a payback four times larger than the Super Collider, had it been completed.

We also have an incentive for secondary and tertiary recovery projects -- and expect this to add more than $50 billion to the economy. We have an incentive for inactive wells to return to production. Over 6,000 wells that had been inactive for more than 3 years began to produce again. The economic gain is estimated to be $1.6 billion a year. We had an incentive for new field discoveries, and had 200 more discoveries than in the base year. Net economic gain is estimated to be $1.5 billion from these new fields. We have an incentive we are implementing to keep marginal wells from being plugged.

There is much more, but let's focus on the future. What else can be done? We need to remove severance taxes on marginal wells, to ensure that these wells produce as long as possible into the future. Most of Texas has been explored for oil and gas, but most of the exploration has been relatively shallow. We are planning to develop an incentive for new field discoveries that push the frontiers of exploration deeper, hopefully providing additional targets for drilling.

And there are many things Congress can do. You, too, should take action to protect marginal wells across the country. Congress should support the development of advanced technology to help recover the oil and gas we have already found. This known resource is worth more than $6 trillion in Texas alone. And you must encourage through incentives the continued exploration of the United States. I don't know if these are best accomplished through credits or other mechanisms, but I do know that you should -- you must -- act soon. The domestic energy industry is suffering under policies of benign neglect. In the past decade we have treated beetles with more compassion than the hard-working men and women in the oil and gas industry.

I urge you to adopt policies that will ensure this country's energy independence. Texans understand that people and paychecks and jobs must take priority over cave beetles, duck-billed flycatchers, snail darters, short-nosed sturgeon eggs and Arkansas river shiners. And Mama in PTA meetings understands how important it is to keep the rig count up -- it means severance taxes to our state, ad valorem taxes for our school districts, and paychecks and jobs for our children and grandchildren into the 21st Century. Thank you.

TABLE 1			
RESPONSE TO INCENTIVES			
	Year	Wells Drilled	Cumulative Production (MCF)
Combined State & Federal Incentive	1989	143	222,476,113
Combined State & Federal Incentive	1990	516	519,874,950
Combined State & Federal Incentive	1991	1,015	800,953,324
Combined State & Federal Incentive	1992	2,316	1,476,399,860
State Incentive	1993	598	348,467,354
State Incentive	1994	1,375	531,758,166
State Incentive	1995	1,975	312,439,686
TOTAL		7,938	4,212,369,453

TABLE 2	
ECONOMICS OF HIGH COST GAS WELLS	
1. Production Values	
Well Head Value @ $1.80/MCF	$7,582,265,015
Economic Value Using 2.91 Multiplier	$22,064,391,194
Tax Revenue Gains	
Estimated Sales Tax @ 2% of Economic Value	$441,287,823
Estimated Local Property Tax (Schools)	$397,159,041
Tax Revenue Losses	
Severance Tax Lost Through Incentive	$568,669,876
2. Drilling Values	
Cost to Drill (7,938 x $800,000/well)	$6,350,400,000
Economic Value Using 2.91 Multiplier	$18,479,664,000
Tax Revenue Gains	
Estimated Sales Tax @ 1% of Economic Value	$184,796,640

Comments of
F.W. "Pete" Brown, Chairman
Oklahoma Energy Resources Board

Presented to the
U.S. House of Representatives Committee on Resources
Oversight Field Hearing

Friday, February 2, 1996
Houston, Texas

It is my pleasure today to represent the Oklahoma Energy Resources Board, the nation's first governmental entity created specifically to advance the dual purposes of oil and natural gas-related education and environmental restoration.

The OERB was created by the Oklahoma legislature in 1992. The enabling statute established a board of 21 individuals from various segments of the Oklahoma exploration and production industry. I am one of those lay persons.

The OERB is charged with oversight of an assessment of two cents per barrel of crude oil produced in Oklahoma. The OERB assessment is mandatory in that all interest owners, including independent producers, major companies and royalty interest owners, contribute their proportionate share of the two cents per barrel fee. The OERB assessment is not a tax, *per se*, because each interest owner has the ability to apply for a refund of his assessment amount during a 90-day "window" between January 1 and March 31 each subsequent year.

In calendar year 1995, the OERB fund collected a total of about $1.7 million. The refunded amount for last year was less than $90,000, or less than five percent (5%) of the amount assessed.

Bottom line, last year the OERB spent more than $750,000 on energy education and slightly more than that amount on restoration of abandoned and orphaned oilfield sites. Early results are extremely encouraging. More than 100 physical sites have been restored and twice that many projects are under way. According to our research, public understanding of the role of the oil industry in Oklahoma's economy is being significantly impacted by our multi-faceted energy educational program.

The OERB program is a good example of public-private partnering. It is also a classic case of privatization of a previously government-controlled function. Perhaps the most unique aspect of this pilot program is that the OERB operates as a state agency with no employees. All OERB functions -- environmental restoration, public education and even office administration -- are achieved through competitively bid sub-contracts with the private sector. Consequently, OERB administrative costs are only seven percent (7%).

I believe the OERB model should be utilized by Congress to create a national oil and natural gas "checkoff" program for both educational and environmental restoration purposes. It is my understanding that the Independent Petroleum Association of America (IPAA) is presently organizing a consortium of oil and gas industry organizations in an attempt to build the necessary consensus to bring such a measure before the Congress in 1996.

I am proud to have served as one of the founders, and the current chair, of this innovative program. I am one of those independent oil and gas producers whose two cents a barrel is being utilized to change the landscape -- both literally and figuratively -- of the public perception of the domestic oil industry in Oklahoma. I am proud to be from Oklahoma, where our public policy makers are unafraid and unashamed to support issues that enhance the opportunity for oil and natural gas exploration and production to survive.

The creation of the OERB is but one example of the proactive efforts of our Legislature and recent governors, bridging both political parties, in attempting to address energy policy issues. These Oklahomans have done so as a matter of necessity, filling a vacuum created by federal policy makers who refuse to acknowledge the vital importance of the domestic oil and natural gas industry. You see, in Oklahoma we have answered in the affirmative what I believe is the baseline question that must be addressed at some juncture by Congress. That question is: Is the domestic oil and natural gas industry worth preserving?

During the past four years, in addition to creating the OERB, the Oklahoma Legislature has:

* Enacted a series of state tax incentive programs targeted at encouraging new exploration, enhancing production from existing wells and to returning previously abandoned wells to productive capacity;

* Enacted legislation to provide clear authority for Oklahoma's state oil and gas regulatory agency, the Oklahoma Corporation Commission, to adjudicate disputes arising out of natural gas gathering/pipeline spin down or spin-off activities, filling a regulatory gap created by recent policy changes within the Federal Energy Regulatory Commission (FERC);

* Enacted various legislation that has simplified and clarified what I call "the mechanics" within the oil and gas community -- such as payment of royalties, prorationing of natural gas and other complex and often controversial details.

It has become clear to us in Oklahoma that since the oil price collapse more than a decade ago (December, 1985, to be precise) there has not existed sufficient political will at the federal level in either Congress or various administrations, to push for enactment of meaningful tax incentives or regulatory reform that might benefit small businesses, including most domestic energy producers. Some would say the federal government needs not to be concerned with this industry, judging from the quarterly earnings reports of such well-known leaders in the oil industry such as Exxon, Texaco and others. Unfortunately, those companies are not representative of the typical oil and gas producing company in Oklahoma, where fully 80% of our natural gas production and 70% of our crude oil production comes from independent producers. These small businessmen have only one profit center -- the wellhead -- and generally must accept the world/regional price for their commodity.

As both an independent oil and gas producer and an appointed quasi-governmental official, I wish today to advance only a few concepts that I believe may be politically achievable at the congressional level.

First and foremost, I would urge the Committee to continue its efforts from last year in attempting to enact significant regulatory reform measures. Congress must:

* Require risk assessment and cost-benefit analysis on all new regulations proposed by federal agencies.
* Apply the same criteria to existing regulatory regimes, with an ultimate goal of strengthened congressional oversight and, where appropriate, roll back federal regulations that fail to provide a public interest benefit commensurate with their costs.
* "Spin down" regulatory compliance and enforcement authority and its funding to the states. It is imperative that Congress reduce and redefine the role of federal regulatory agencies, away from the "one size fits all" mentality of rules and regulation enforcement such as have been implemented (ineffectively) for such important laws as the Clean Water Act, the Clean Air Act, the Resource Conservation Recovery

Act and the Safe Drinking Water Act. A more localized compliance-enforcement model for all regulatory statutes should be devised, implemented and funded, perhaps through bloc grants to state regulatory agencies.

Obviously, the OERB is committed to effective and efficient regulation. In fact, the state of Oklahoma has a long history of leadership in advancing a cooperative and effective approach to the regulation of this industry. But I believe it is true the most effective and efficient governmental regulation is that which is "closest to home."

Consequently, I would suggest that Congress, and the current administration, cooperate in expediting a massive "spin down" of both responsibilities, mandates and funding of federal regulatory regimes, similar to what is transpiring within certain areas of the FERC, to the various state authorities with responsibilities in these areas.

The goal here is to eliminate duplication of services and government waste, at all levels. Let me give you just one example of overlapping, and unnecessarily costly, regulation of the Oklahoma oil and gas industry, bearing in mind that our state is one of the more effective and efficient regulators of this industry.

If I own an oil-producing property in the city limits of Oklahoma City, Oklahoma, I may be required to deal with:

* City of Oklahoma, various permitting and inspection offices
* Oklahoma County, various permitting and inspection offices
* Oklahoma Corporation Commission
* Oklahoma Tax Commission
* Oklahoma Employment Security Commission
* Oklahoma Department of Environmental Quality
* Oklahoma Water Resources Board
* Oklahoma Department of Labor
* Oklahoma Department of Wildlife Conservation
* U.S. Environmental Protection Agency
* U.S. Fish & Wildlife Service
* U.S. Department of Interior, Minerals Management Service
* U.S. Department of Interior, Bureau of Indian Affairs
* Internal Revenue Service.

And, depending on the type of my facility, the list could be considerably longer. Most, if not all, of these jurisdictions have been spawned in the past 20 years by one federal mandate or another.

Maybe we should consider ourselves fortunate in Oklahoma. Our industry colleagues in Texas, depending on the location of their operations, may get to deal with the U.S. Coast Guard and the Texas Department of Natural Resources, which some have less-than-affectionately dubbed "the Texas Trainwreck."

I will close with a short "laundry list" of issues that I believe Congress should address in the near-term.

1) Lessening federal governmental regulation where environmental or safety benefits are not commensurate with the costs;

2) Redirecting federal governmental authority to state and local regulators;

3) Providing/preserving tax incentives to preserve "at risk" marginal oil and gas wells;

4) Expediting additional, properly directed technology transfer

5) Creating a National Oil & Gas Education & Environmental Restoration "Checkoff" Program

I urge this Committee to take the lead in Congress to provide and preserve much-needed tax incentives, as well as special regulatory status, aimed at maintaining the hundreds of thousands of "at risk" oil and gas wells. These wells should be viewed by Congress and by federal regulators as potential assets for the nation, not potential liabilities.

Technology is advancing at a pace where millions of barrels of oil that was previously unrecoverable (at current prices) may soon be available, if these marginal wells are not forcibly plugged by overzealous regulatory bodies.

And, speaking of technology, only in the past few years has the administration, through the Department of Energy, begun to provide the means by which cost-effective technologies can be disseminated to the independent oil and gas sector. This initiative has filled an important gap as the domestic industry restructures. Historically, most technology research and development was conducted by and for the major integrated companies. Today, these multi-national entities are abandoning R&D for

domestic production. If the federal government fails to recognize the importance of continued fossil fuel R&D funding, at least during the current transition within the domestic industry, there seems a significant likelihood that much of our nation's recoverable oil and natural gas resources could go undiscovered or unproduced.

Ironically, in responding to budget cutbacks enacted by Congress, the DOE currently threatens to close, or significantly downsize, the nation's only federally funded oil research facility, the National Institute for Petroleum Energy Research, in Bartlesville, Oklahoma.

In Oklahoma, it should be obvious that we believe the answer to what I called the baseline question on domestic energy policy is "yes." Unfortunately, political realities in Oklahoma City and in Washington, D.C. are somewhat dissimilar. Therefore, it is our firm belief that, in order to have any opportunity to advance the issue of domestic oil and natural gas production to a place on the national agenda, we must first educate the general public with the facts about this industry.

The domestic oil and gas exploration/production industry has survived a devastating decade of decline. However, without significant initiatives by government (federal, state and local) to recognize the importance -- and the fragility -- of this vital national industry, the era of the small business entrepreneur in the U.S. energy sector may be ending.

Thank you.

Statement

of

William L. Fisher

to

U.S. House of Representatives

Committee on Resources

February 2, 1996

Houston, Texas

Mr. Chairman and Members:

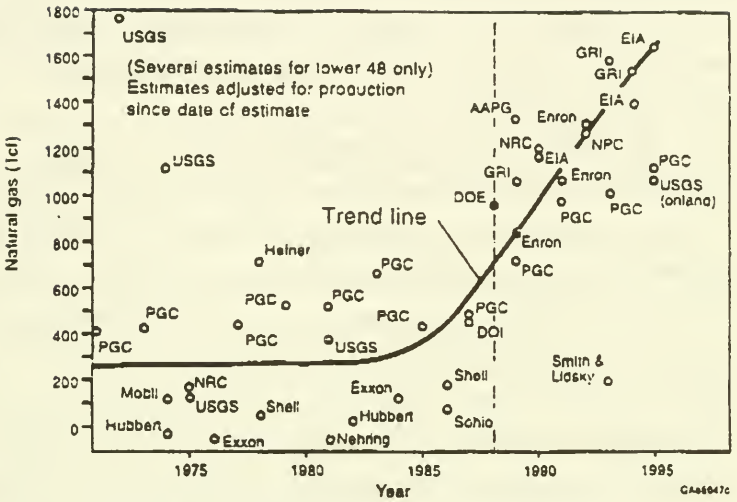
I am William L. Fisher, Barrow Chair of Mineral Resources and Professor of Geological Sciences at The University of Texas at Austin. I appreciate the invitation to be before you today and to provide my observations on U.S. oil and gas production and resources.

I.

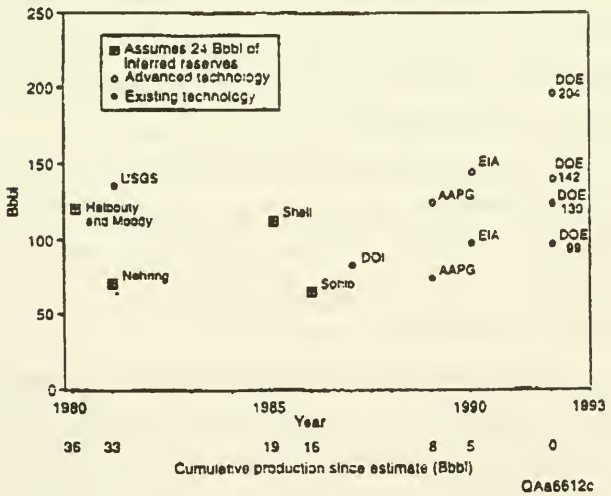
Currently, oil supplies are ample and ready, albeit an ever-increasing share is coming from imports. Domestic supplies of natural gas have met or exceeded demand for the past 11 years. In real terms, prices of oil products, natural gas, and gasoline are among the lowest in a decade-and-a half. These ready supplies of oil products and natural gas and their low prices are quite positive for the U.S. economy in the short term, ignoring the substantial and growing external costs of imported oil, which could create significant longer term costs.

Perhaps the most fundamental change in domestic oil and gas issues in recent years has been the perception of the remaining resource base.

In case of both the oil and natural gas resource base, estimates in the past 10 years are substantially greater than those made 20 years ago, and some estimates are an order of magnitude greater. Remarkably, these increased estimates of the remaining oil and gas resource base were made in the late 1980's and the first half of the 1990's, a period of historically low oil and gas prices. To be sure,



Estimates of remaining natural gas in the United States



Estimates of remaining recoverable oil, including proven reserves at time of estimate

most recent estimates envisage some modest increase in prices over the next couple of decades, but the real driving force in larger supply at lower costs has been a growing appreciation of the role of discovery and recovery technology.

Historically, we have assumed that volumes of resources convertible to producible reserves and supply were chiefly a function of price. Price continues to be important, especially in influencing the amount of oil and gas drilling undertaken and in spurring investment in higher cost areas, but increasingly we are seeing development of the resource base being as sensitive to technology as it is to price, at least within a reasonable price range. For example, the National Petroleum Council shows a recoverable gas resource base of 600 Tcf at a price of $2.50/MMBtu, assuming 2010 technology. At prices of $3.50/MMBtu but with 1990 technology, the recoverable volume is the same—600 Tcf. Similar results are shown in the DOE estimate of recoverable oil resources. A $27-per barrel price with existing technology yields 130 billion barrels, whereas a $20 price with advanced technology was larger at 142 billion barrels.

Technology also stretches the resource base. For certain, oil and gas are nonrenewable, finite resources, and much of the flush production in the United States has already been realized. But we have yet to determine the boundaries of finiteness nor to fix the limits of economic and technology exploitability.

Another critical aspect of technology, and here assuming that technology embraces concepts and know-how, is its substitution for price. After nearly a decade of depressed and uncertain oil and gas prices, the wonder is not that we have a reduced domestic industry but

rather that we have any industry at all. Such is the manifestation of the rigorous application of technology.

Unquestionably, our views of the U.S. resource base now incorporate the notion of technological stretch, in substantial contrast to the judgment of exponential decline widely held a dozen years ago. Exponential decline concepts yielded a public policy of resource scarcity, supply rationing, actual prohibition of certain uses, and inordinate price distortion, as even a casual reference to the National Gas Policy Act of 1978 or the Fuel Use Act will show.

But by the early 1980's, average gas prices were up. Gas well completions were up. Reserve additions were up, and supply had begun to outpace demand, also owing to a significant reduction in demand in the face of higher prices and use constraints. As prices fell in the middle 1980's with oversupply, technology was rapidly substituted for price. Resource additions, which had been running 0.8 Bcf per completion in the early 1980's, have more than doubled in recent yeas and continue to increase. As a result, total gas additions have remained at about the same level of the early 1980's, when drilling effort was 100 percent greater. The doubling in volume of additions per unit of effort has been a major factor in reducing finding costs of natural gas by better than half. Not all this increase in additions per effort is from more rigorous application of technology, but much of it is.

Finally, the volume of reserves added per annual rig count had been steadily declining from the middle 1960's through the middle 1970's. The decline started after discovery of most of the giant fields by the middle of the century and was accelerated by the increased, but less efficient, drilling of the late 1970's and early 1980's. With less but

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more efficient drilling and with technology substituting significantly for price, additions per rig are now three times greater than they were 15 years ago.

II.

The U.S. situations concerning oil and gas are quite different. Domestic gas supplies have been and continue in overall surplus. The size of the resource base as now perceived along with technology reducing costs of finding and development permit forward, long term gas supplies at increased levels and nearly flat real prices. Gas marked for scarcity and higher prices 20 years ago has changed to a projected long term era of ample supply and low costs.

Crude oil in the United States has yet to make the turnaround natural gas has made. Production decline, which began nearly a quarter of a century ago, has persisted, except for reversals a couple of years over the period. The estimated remaining U.S. oil resource is nearly 200 billion barrels under assumption of a continued pace in technology and prices about 50 percent higher than currently. At current prices, the estimated volume remaining recoverable is about 140 billion barrels, a robust volume, but barely half the estimates for the remaining natural gas resource.

Perhaps more tellingly, oil is added to reserves at an average of about 150,000 barrels per oil well drilled. The average yield per effort for gas is 2.5 times greater. And although the value of produced oil is 50 percent higher than gas as a Btu equivalency, the substantially better yields for gas make it a more favored exploration and development target.

To be sure, oil discovery rates are and continue to be profitable to U.S companies geared to a discovery size increment now existing. Several intermediate sized companies, small enough in size to avoid high overhead yet large enough and with sufficient resources to buy and utilize advancing technology, are effective. As the shift from the historical perception of oil exploration and development based on economy of scale to activity rather exclusively based on the economy of efficiency takes place, oil activity in the United States will enlarge. Downward trend in production will likely be reversed, but also likely not to a level of domestic sufficiency.

Perception of future price plays a significant role in how deliberately a resource is pursued. Natural gas prices in recent years have been much lower than many producers expected and while future expectations of gas prices may be modest, there is little perception that gas prices will collapse. The opposite holds for oil whose world price depends on the ability of a diverse and rather loose cartel to balance supply and demand. The continued expectation that oil price falls are possible, if not probable, leads to discounting of oil prospects. If there were a high degree of confidence that oil prices would hold steady, the amount of oil drilling in the United States would likely be 25 to 40 percent greater than it has been in recent years. The United States could effect an oil price stabilization policy, but has been unable in recent years to devise a policy acceptable to all despite a 40-year historical precedent in doing so.

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The United States, as indeed most of the world, has made major strides in more efficient use of oil and natural gas. Still the United States consumes a quarter of the world's production of oil and gas and has an overall economy heavily dependent on oil and natural gas. As such, it is in the Nation's direct interest to have an oil and gas industry as viable as the resource base and our ingenuity will support. We should open to exploration and development those federal lands and waters now closed, for many of these hold a significant part of our yet to be discovered oil and gas resource. We should, as a matter of policy, foster the further advances and utilization of technology, through appropriate use of tax incentives. And while technology has been applied and pursued rigorously in the face of low prices, and with good results, are we making an appropriate pubic and corporate investment in future technological development? Trends in both public and corporate research and development expenditures suggest we are not.

The big policy issues in domestic oil and gas development, like price stability and exploration access, will not be solved easily regardless of their importance in domestic production and the Nation's economy. Policies that can be agreed upon are those that advance technology and know-how and those that provide focused incentives to encourage development of higher costs and riskier developments. We also appreciate that the technology that has improved oil and gas discovery and recovery is matched by technology that now makes development and production, especially offshore and in Arctic regions, to a great degree, environmentally benign. Accordingly, regulations should be balanced.

Thank you.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

William J. LeMay, Director

January 31, 1996

U.S. House of Representatives
Committee on Resources
Washington, D.C. 20515

Gentlemen:

Thank you for giving me the opportunity to comment on the implications, both nationally and within the State of New Mexico, of declining U.S. oil and gas production and what can be done about this devastating development. I think by now you are all familiar with the plight of our domestic oil and gas industry. We've gone from over 4,000 active drilling rigs in the U.S. in 1982 to 700 active rigs today. The "Majors" keep downsizing their domestic operation forming partnerships to lower operating costs and selling off marginal properties. The "Independents" just keep struggling to survive with many of them going out of business. Any fat that was part of our industry has long ago been eliminated and we are now cutting into muscle.

Rather than dwell on negatives however, I would like to emphasize some positive courses of action that can help reverse the decline in domestic drilling and production. If I told you that we could lower our foreign exchange payments while improving the balance of trade deficit and create jobs and wealth that we could keep within the borders of our country and at the same time produce an environmentally superior product, natural gas, and its associated brother, crude oil, I think you would agree that embracing this strategy is a *win-win* situation. Why are we then not valuing this product, natural gas, with a mandate to promote its development and use? Why when importing over 50% of our crude oil needs there hasn't been the commitment to fully develop our domestic crude oil supply? I think the answer lies in our failure to fully embrace an *energy policy* that:

1. PRODUCES A FAIR TAX CODE THAT ENCOURAGES DOMESTIC EXPLORATION AND DEVELOPMENT AND EXTENDS THE PRODUCTIVE LIFE OF STRIPPER WELLS.

2. ENCOURAGES RESEARCH INTO ECONOMICAL WAYS TO EXTRACT HIGHER PERCENTAGES OF THE OIL-IN-PLACE IN OUR PRODUCING DOMESTIC OILFIELDS.

3. SUBSTITUTE CLEAN BURNING, DOMESTICALLY PRODUCED NATURAL GAS FOR GASOLINE REFINED FROM FOREIGN CRUDE OIL IN OUR TRANSPORTATION SECTOR.

4 MAKES AVAILABLE FOR DRILLING POTENTIALLY PRODUCTIVE FEDERAL ACREAGE WHILE ENSURING THE PROTECTION OF THE ENVIRONMENT.

5 PRODUCES A REGULATORY CLIMATE THAT IS EFFICIENT, CONSISTENT, PREDICTABLE, FAIR AND REASONABLE WHILE PROTECTING HUMAN HEALTH AND THE ENVIRONMENT.

It is this fifth point that may be the easiest to accomplish so I wish to address this issue with some concrete recommendations. We *can* streamline government and make it more efficient. We can start by changing the regulatory approach from one of "command and control" and "one size fits all" to programs that emphasizes results over procedures and cooperation over confrontation. The roll of the regulator should change to one who educates industry and the public on "pollution prevention", and who is committed to utilize scarce available resources by working with industry and the public to direct those resources to the greatest good. We need to get the "biggest bang for the buck" and that does not include expensive litigation.

Also we can eliminate duplication in our regulatory process. There is no reason for the Bureau of Land Management to be regulating oil and gas drilling and production when the States have been doing this for over sixty years -- and *successfully!* Why has a parallel bureaucracy been created to copy and duplicate regulatory procedures just because of different land ownership? We are the experts and should regulate the exploration and production activities on state, fee *and federal lands,* leaving the surface land use issues to their respective federal agencies to manage. State oil and gas conservation rules prevent waste, protect correlative rights of all interest owners and protect human health and the environment. We need to eliminate a parallel process of regulation. It is costly, inefficient, wasteful and cumbersome to comply with at best. At worst it produces confusion, delay and results in wells not being drilled and the premature plugging of producing wells. The states have always been the leaders and architects of conservation. *It is time to eliminate duplication of regulation in the oil patch.*

Respectfully submitted,

William J. LeMay
Director

PRESENTATION BY

ERNEST A. BURGUIÈRES, III, ASSISTANT SECRETARY AND COMMISSIONER
LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

Prepared January 31, 1996

FEDERAL ISSUES AND THE LOUISIANA OIL AND GAS INDUSTRY

Below are a number of areas that the federal government could address and improve U.S. oil and gas production and employment opportunities.

1. ANWR: The opening of ANWR to oil and gas exploration and production would have significant impact on oil and gas production and employment. There would be a substantial ripple effect that reach all states that has oil and gas companies.

2. Eastern Gulf Lease Sales: Lifting of the ban on Eastern Gulf of Mexico OCS leasing would likewise improve prospects for oil and gas production and employment. The safety record of oil and gas activity in Federal and State waters of the Western Gulf of Mexico continues to improve. In fact, the evidence suggests that there is a greater environmental danger from shipping used to bring in foreign crude than domestic exploration and production activities.

Both of these actions would improve Louisiana's economy, being as Louisiana often provides the technology for oil and gas exploration and production throughout the U.S. and the world. Much of the equipment necessary for this exploration and production would be constructed in Louisiana.

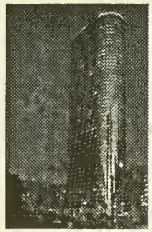
3. OPA 90: Impediments still exist within OPA 90 to future oil and gas development. Specifically, resolution of the COFR requirements is extremely important. The U.S. House has, of course, passed a bill to address this issue. The U.S. Senate has also passed a bill which is favorable as well. The House version is the better of the two. Resolution of this issue in conference committee is important.

4. Regulatory Costs: The EPA and other federal agencies are considering a number of regulations which, if adopted, could have significant impacts on future oil and gas development in the U.S. The API has recently concluded a study in this regard which concludes that "the U.S. petroleum industry's exploration and production sector potentially could be responsible for more than $14 billion in additional environmental protection requirements between 1996 and 2000, if only the regulatory proposals currently under consideration are enacted." The study also looked at legislative proposals being considered by Congress and concluded that, if enacted, these could raise the industry's compliance costs by over $27 billion. Obviously, these impacts would be devastating to the U.S. oil and gas industry.

5. EPA Permitting. The EPA is not issuing discharge permits in the territorial seas of Louisiana. This lack of permitting is delaying exploration and production which will result in additional Louisiana employment and the payment of additional royalty and severance taxes to the state.

6. MMS Royalty Relief Regulations: Current MMS Royalty Relief Regulations are delaying and impeding some OCS oil and gas development. They should be revised. Rules need to be formulated on the recently passed federal legislation with respect to "deep water royalty relief".

7. Overlapping regulation by federal and state authorities: Greater deference should be given to State agencies in the regulation of oil and gas activities. The tendency for the Federal Government to "micro-manage" matters leads to unnecessary expenditures of resources that does not necessarily further any legitimate public goals.



"Enron's Role in the Globalization of Natural Gas"

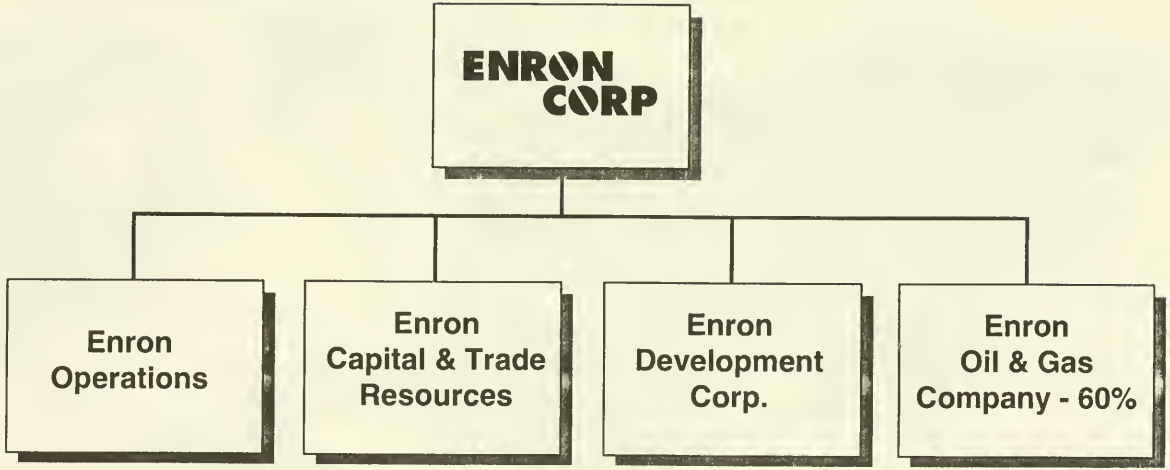
House Resources Committee
Subcommittee on Energy and Minerals
Houston, Texas

Richard D. Kinder
President and COO
ENRON CORP

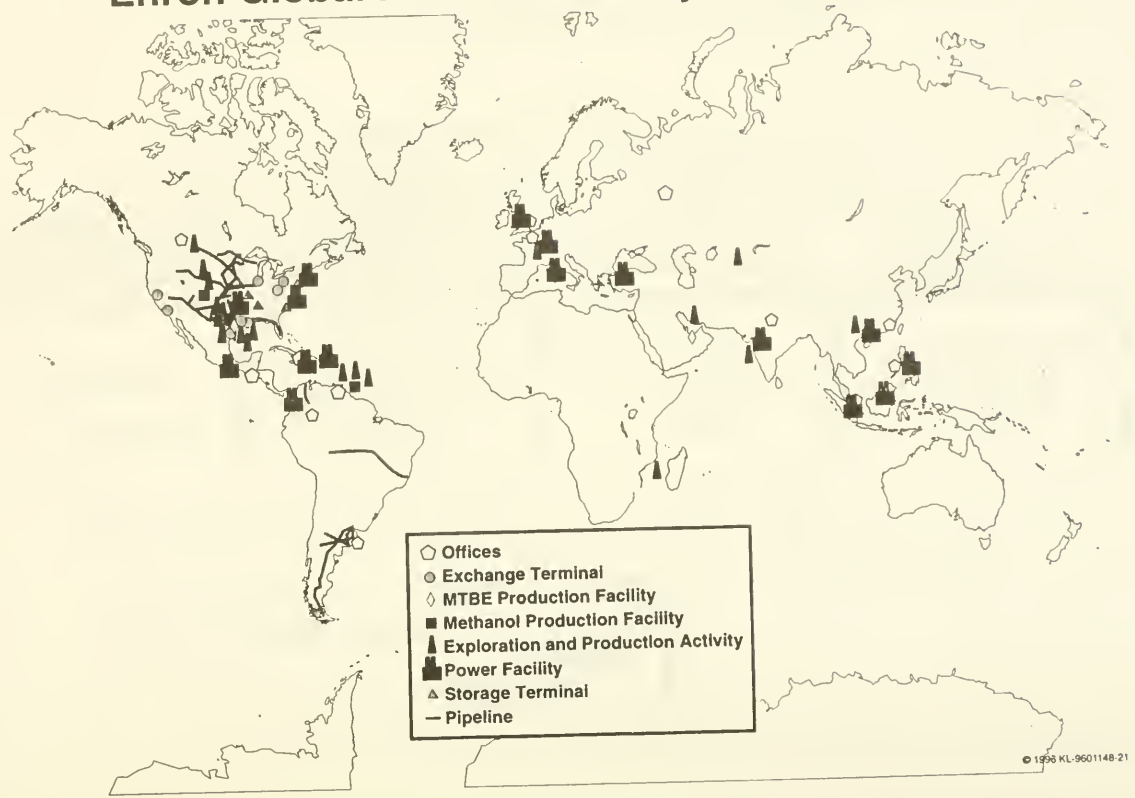
February 2, 1996

Summary of Enron Corp.

- A clean-energy company specializing in:
  - Natural gas exploration & production
  - Natural gas pipelines and gas processing plants
  - Gas-fired power development
  - Energy marketing and trading (primarily natural gas, natural gas liquids and electricity)
- Assets of $14 billion
- Market value of over $9 billion as of 12/31/95
- Actual projects or planned development in 30 countries with a current backlog of $20 billion

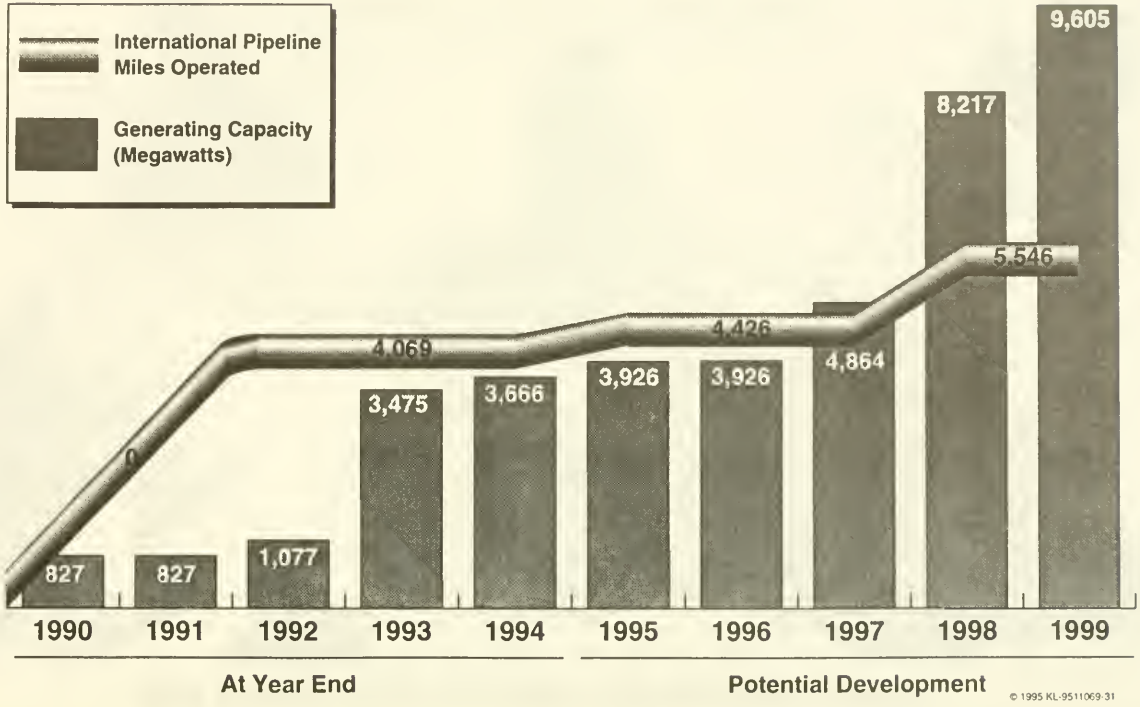


Enron Global Presence & Project Experience

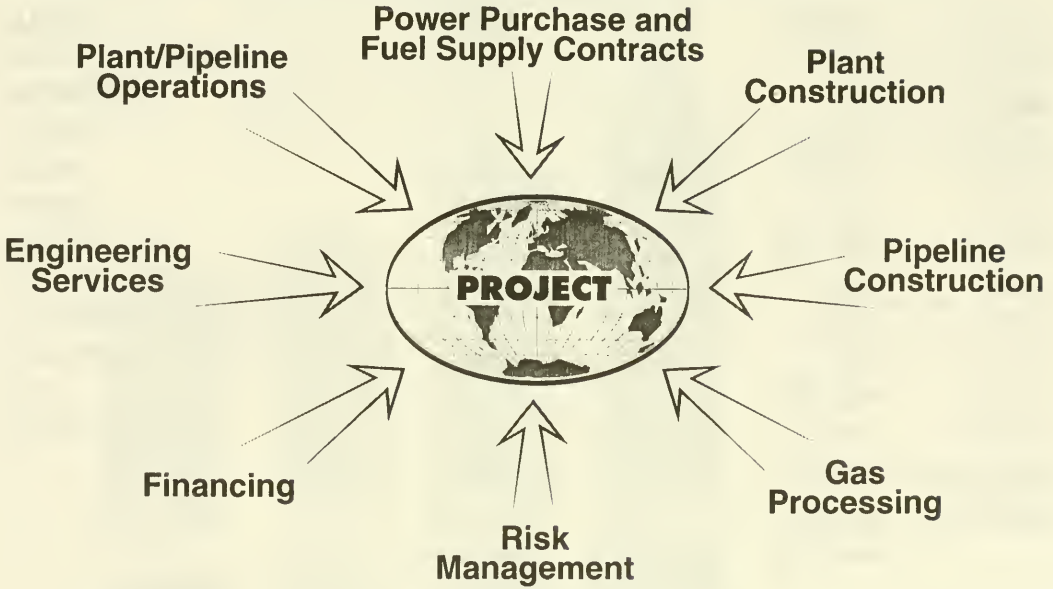


All Projects Under Development

Power and Pipeline Development at Enron



International Capabilities



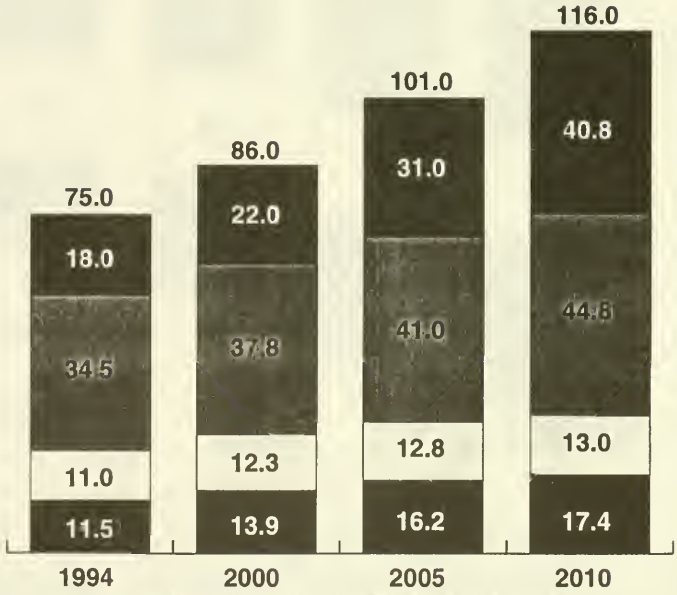
Unique Ability to Provide the Full Range of Activities Necessary to Complete Integrated Natural Gas Projects

Growth Opportunities - Power
Current Planned Additions
(Gigawatts)

	Installed Capacity 1994E	Expected Capacity 2010	Planned Capacity Increase	Percent Increase
North America	952	1,193	241	25%
U.K.	79	99	20	25%
Western Europe (Excl UK)	521	601	80	15%
Central & South America	140	199	59	42%
Eastern Europe & CIS	378	470	92	24%
Middle East	116	170	54	47%
Africa	88	111	23	26%
India	68	135	67	99%
China	136	440	304	224%
Indonesia	15	36	21	140%
Other Far East	381	622	241	63%
Total	**2,872**	**4,075**	**1,203**	**42%**

Note: Excludes retired, deactivated, shut down and deferred units.
Source: UDI World Electric Power Plants Database, April 1995: DRI

World Natural Gas Demand by Segment
(In Quad Btu's)

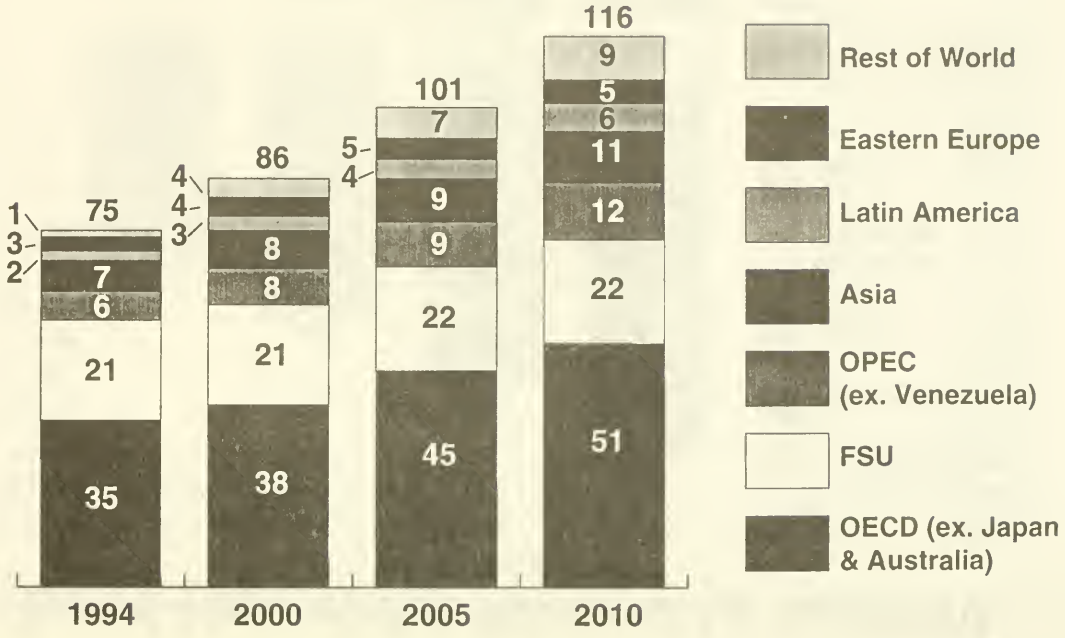


Volume Growth 2010 vs 1994	
Power Plants	22.8
Industrial	10.3
Residential/ Commercial	2.0
Other(1)	5.9
Total	41.0

(1) Includes E&P and government use, gas plants, and pipelines

Source: 1995 Enron Outlook

World Natural Gas Demand by Region
(in Quadrillion Btu's)



World Energy Demand Outlook
(in Quad BTU's)

	1994	2000	2005	2010	Annual Growth Rate
Oil	141	155	166	175	1.5%
Natural Gas	75	86	101	116	3.0%
Coal	90	98	108	120	1.9%
Nuclear	21	22	22	22	.003%
Hydro/Renewables	27	35	40	51	4.2%
TOTAL ENERGY	354	396	437	484	2.2%

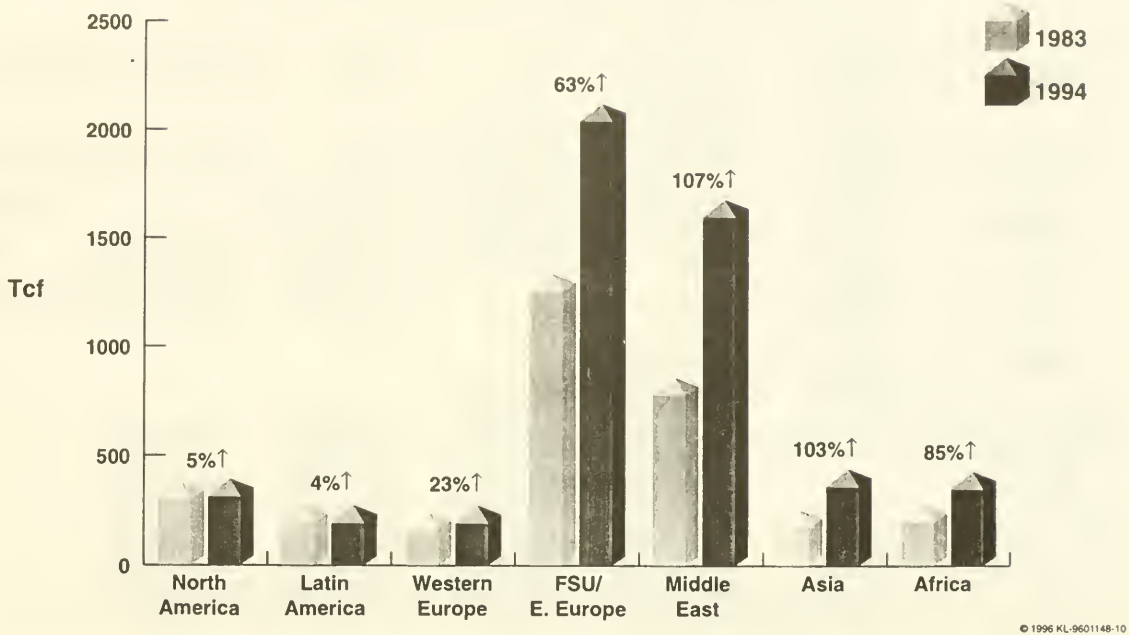
World Natural Gas Demand Grows 3% Per Year Over the 1994-2010 Time Frame, Compared with Total Energy Growth at 2.2%

Source: 1995 Enron Outlook

World Natural Gas Proven Reserves

1983 versus 1994

(in Tcf)



TESTIMONY BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON RESOURCES
Friday, Feb. 2, 1996, 1:00 p.m.
George R. Brown Convention Center
Houston, Texas

BY

ERNEST H. COCKRELL
PRESIDENT AND CHIEF EXECUTIVE OFFICER
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Testimony before the
U.S. House of Representatives
Committee on Resources
Friday, Feb. 2, 1996, 1:00 p.m.
George R. Brown Convention Center
Houston, Texas

Subject: Economic and Employment Implications of Declining U.S. Oil and Gas Production

My name is Ernest Cockrell. I am President and Chief Executive Officer of Cockrell Oil and Gas, Limited Partnership. We are a small, privately owned, oil and gas exploration company located in Houston, Texas. We focus our activities primarily on the Gulf of Mexico and Gulf Coast of Louisiana and Texas. Our company has approximately 40 employees and a reserve base of 100 BCFE (Billion Cubic Feet Equivalent) of gas reserves.

I am certainly not an expert predicting future U.S. oil and gas production or reserve levels. Additionally, I am not an expert on all the myriad of policies and laws in effect and pending, which affect the oil and gas industry. My purpose today is to simply state my view of where the industry is going, especially as how it relates to an independent.

The title of the hearing today assumes declining U.S. oil and gas production and reserves. Both oil and natural gas reserves have been on a steady decline for some years. This trend may or may not continue, depending on real product price increases, tax burdens, accessibility of public lands for lease, significant technological breakthroughs, and levels of consumption.

Because our company primarily produces natural gas, I will focus on it. U.S. natural gas reserves (including Alaska) decreased from about 200 Trillion Cubic Feet (TCF) in 1982 to about 168 TCF in 1988. Gas reserves have more or less stayed constant since 1988. Consumption decreased markedly from 1981 to 1986 from 23 TCF per year to 16.7 TCF per year. Consumption has increased since 1986 to 21.8 TCF per year in 1995. In 1981, the U.S. produced 19.2 TCF per year of gas. Production declined in 1986 to 16 TCF per year. It has increased to 18.96 TCF per year in 1995. Canadian imports in the U.S. in 1981 were .87 TCF per year. These decreased to .75 TCF by 1986, but since 1986 have

increased to 2.78 TCF per year in 1995. Canada has supplied 50% of the increase consumption in the U.S. over the past three years.

Production and consumption of natural gas in the U.S. has been markedly affected by pricing and demand for the product. Much has been said of the gas bubble, which is in reality excess gas deliverability over demand. In 1986, U.S. companies produced 80% of their deliverability. In 1995, they are producing at 97% of deliverability.

What does all this mean? First of all, we cannot expect to increase production further by decreasing the reserve to production ratio. The reserve to production ratio has steadily declined as reserves have stayed more or less constant (since 1988) but production levels have increased substantially. The lower 48 states reserve to production ratio now stands at about 6.9 years. The industry is going to have to put in a tremendous effort to hold reserves and production at their present level, assuming the current price and tax environment.

Second, declining oil and gas production and reserves have major impact on jobs. Declining reserves in the late 1980's along with poor prices caused a tremendous downsizing of the industry. Oil and gas employment was cut in half, with the loss of nearly 500,000 jobs. Employment in the industry is extremely price sensitive. For instance, the Independent Petroleum Association of America (IPAA) estimates that 75,000 jobs are at risk if crude oil prices return to the low levels seen in the 4th quarter of 1993 and the 1st quarter of 1994. During that price decline, 22,000 jobs were lost between November 1993 and March 1994.

Third, oil and gas exploration and production is very sensitive to product prices. For example, in 1994 drilling for domestic natural gas and crude oil hit the lowest level since records were kept beginning in the 1940's. For the last two years, the rig count has been stagnated at levels just slightly above the all time low. Well completions in 1994 were 8,079 gas wells, 5,856 oil wells, and 5,062 dry holes for a total of 18,997 wells. This is down some 6,054 wells from 1993. The point of this is that natural gas and oil prices have been low over the last couple of years and drilling has declined due to those low prices.

Lastly, declining U.S. production means increased imports, which adversely affects our balance of payments. We are now importing almost 9 million barrels (MMBLS) per day of crude oil, and as I stated earlier, significant amounts of natural gas. Our dependency on crude oil imports is now more than 50% of total U.S. consumption.

In a nutshell, declining reserves and production means loss of jobs and negative pressure on our balance of payments.

The oil and gas exploration and production industry continues to be in a state of rapid change as it allocates the proper manpower and capital necessary to manage and exploit the economic oil and gas reserve base of the United States. Additionally, it is developing new technologies, which are changing the way we explore for and produce oil and gas. Lastly, it is adapting to the very significant change in the way natural gas is sold in the U.S. since the government deregulated those markets. During this time of extreme uncertainty and upheaval within the industry, it is important that government policies be consistent and supportive, if we are to slow or reverse the decline in reserves.

We need a strong domestic oil and gas exploration industry, not only to efficiently manage our domestic resource base, but also to assure the continued dominance of American companies on the world oil and gas scene. Our exploration and service expertise is in effect an export product for this country.

As a small company, we believe there is plenty for us to do in the Gulf of Mexico and in the Gulf Coast of Texas and Louisiana. In this area of operation, we have three landowners--the states of Texas and Louisiana and the United States federal government. We work well with each and with the various agencies that regulate us, such as the Minerals Management Service (MMS), the Department of Transportation (DOT), the U.S. Coast Guard, and the Environmental Protection Agency (EPA). However, to be successful we require several things. We need consistent, predictable, and practical government laws, policies and regulations. We make long-term financial and manpower commitments. Changes in policies and unpredictability of regulations can impact us tremendously. Secondly, we need consistent leasing policies. In the Gulf of Mexico, the MMS gets an A+. Today, there are two Gulf of Mexico lease sales per year. This gives to us the opportunity to lease lands and act upon our ideas. Thirdly, we need consistent and standard lease terms. Again, in the Gulf of Mexico the MMS has done an outstanding job. The royalty terms on the continental shelf are fixed; and the lease term is five years. In the deep water, the royalty is also fixed and the lease term is 10 years, commensurate with the lead time in developing reserves in that area. Fourth, we need timely permitting and approval by the various government agencies of wells to be drilled, plans for exploration, platforms to be set and pipelines to deliver our product. It is our hope that the various federal agencies will continue to review and streamline these regulations.

What can the government do to further help? The 104th Congress has made some very significant progress. The repeal of the export ban on Alaska north slope crude was the commonsensical type of legislation that is good for both the industry and the nation. Another example of practical legislation is the royalty abatement in deep water in the Gulf of Mexico. In addition, the MMS has streamlined the royalty relief application process for marginal leases. These initiatives will add to the economic viability of marginal reservoirs in the Gulf, and will provide much needed economic stimulus for jobs in the industry.

However, much needs to be done. As I have stated, America has substantial oil and gas potential. Independent producers are pursuing America's remaining oil and gas resource base, scoring impressive successes, using new geological concepts, innovative drilling techniques, and computerized seismic technology. In the process, we are creating jobs and new economic wealth and discovering new oil and gas reserves in some 40 major production areas in 20 states. Much of this activity is being done on America's vast public lands. Reasonable access to these lands for environmentally responsible drilling and production is indispensable to maintaining a viable domestic oil and natural gas industry. Current laws governing leasing of public land, both onshore and offshore, should be reviewed and reformed. I speak particularly to the offshore areas, as that is where our company is focused. There are vast areas of the U.S. continental shelf which are off limits to oil and gas exploration.

In addition to public lands access, royalty payment reform will be a stimulus to the industry. Payment of royalties is a cost of doing business; however, changes to the federal royalty collection advocated by the industry and currently included in the comprehensive budget reconciliation package will bring much needed fairness and simplicity to royalty collection for both industry and the federal government.

Congress should continue to oversee the regulatory process. For example, the EPA has publicly announced plans to broaden the base for reporting under Section 313 of the Superfund Amendments and Reauthorization Act of 1986. The EPA recently announced plans that it will almost double the size of the list of chemical substance reporting by adding 313 chemicals to the current list of 320 chemicals and include the oil and gas production industry as a reporting industry. The expansion of the Toxic Release Inventory (TRI) program to the oil and gas exploration and production (E&P) industry will create a significant compliance burden. It is expected that 6,000 or more E&P facilities will be required to report with a first-year cost of $200 million and with

annual cost of subsequent years of $100 million. In spite of the significant compliance burden, it is difficult to understand the value of collecting TRI data for E&P facilities. The vast majority of E&P facilities are widely scattered. They are a small source of emission and are usually located in sparsely populated areas. Much information on E&P chemical usage and on unplanned releases is already available through other sources. In addition to the compliance burden on the industry, the burden on EPA to process TRI reports from thousands of E&P facilities will also be significant. This burden is not offset by commensurate environmental benefit.

Another problem that I would like to point out to you, which is especially threatening to us, is the Oil Pollution Act of 1990 (OPA90). Companies such as ourselves now constitute most of the activity on the continental shelf of the U.S. Industry sources report that in the past five years, independents have drilled 85% of the wells on gulf tracts, have made 93% of the oil and natural gas discoveries, and have installed more than 90% of the offshore structures. Independents now produce more than half the natural gas in the federal offshore; however, many independent producers could be precluded from continuing to operate on the federal offshore if the Oil Pollution Act of 1990 is not amended. We are probably one of those producers that would be eliminated. I realize that there are efforts ongoing to amend this act. I cannot emphasize how important it is to do so. The Oil Pollution Act of 1990 prescribed a new prevention, response, liability and compensation regime for oil pollution from vessels, offshore facilities, pipelines and onshore facilities. The MMS is charged with developing regulations to implement the statutes provisions on offshore facilities. The MMS initial interpretation of OPA90, which was subsequently bolstered by interpretation by the solicitor of the Department of the Interior, is radically expansive, proposing to extend the act's provisions related to offshore facilities to include many onshore operations, such as pipelines, marinas and refineries. All of these types of facilities would be required to meet OPA90's burdensome financial responsibility requirements for offshore facilities. Additionally, OPA90 increased the statutory financial responsibility provisions more than four-fold to $150 million from the current level of $35 million per company. In the history of offshore oil production, there has never been a spill which required anywhere near this amount of money to clean up. In fact, the sum of all cleanup and damages for all spills from offshore facilities in any five-year period since offshore continental shelf production began has not exceeded the $35 million requirement current law places on each offshore operator. There is no legitimate rationale for increasing the financial responsibility requirement above current levels. At the very least, the financial responsibility level should stay at $35

million, and only if a facility poses a significant risk to the environment should the Secretary be permitted to increase the financial responsibility requirement for that facility. Also, OPA90 authorizes direct action lawsuits against guarantors. The all inclusive OPA90 definition of a guarantor creates the probability that insurance could be exposed to greatly expanded, legal and financial burdens beyond those traditionally expected of insurers. Under these circumstances, insurers will not write policies under OPA90, denying most independents operating offshore the primary means used today to provide evidence of fiscal responsibility. The Guarantor provision should be limited in order that insurance firms will continue to provide coverage to independent producers who operate offshore and who depend upon those policies for providing evidence of financial responsibility.

I applaud the changes to OPA90 which passed the House in May of last year. As you may know, the Senate passed a somewhat weakened version of the bill in November. Currently, the House and Senate are engaged in negotiations to resolve the bill's differences. It is my hope that the House-passed provisions of the bill prevail.

In conclusion, it is indisputable that the levels of domestic oil and gas reserves are very dependent upon the prices received for the products; the taxing and regulatory environment in the U.S.; the technological advancements in exploration and production; and in the industry's access to public lands. The industry is going through a tremendous rationalization, which has resulted in the loss of more than 500,000 oil-industry jobs in the last decade. Additionally, we are now importing over 50% of our daily needs of oil and substantial quantities of natural gas.

The U.S. has very significant untapped reserves of oil and gas. In order to access these reserves, we must have a strong domestic industry. The U.S. government can do much to help strengthen the industry by promoting laws and regulations which are consistent and practical.

TESTIMONY BEFORE COMMITTEE ON RESOURCES
U. S. HOUSE OF REPRESENTATIVES
OVERSIGHT FIELD HEARING - HOUSTON, TEXAS

Joe B. Foster - Newfield Exploration Company
February 2, 1996

Thank you for the opportunity to testify today.

I remember testifying in 1977 on behalf of a previous employer concerning the massive natural gas supply disruptions in the northeast, which shut down schools and even affected hospitals. There was a fear then we were running out of natural gas. The fact is we were drowning in regulation. During the past month, the northeast has experienced weather as severe as that of 1977, and I am not aware of any gas shortages. I am proud of the way the much-less-regulated, market-oriented natural gas industry has responded.

The Gulf of Mexico OCS has been absolutely critical to this response. About 25% of the U.S. daily gas supply comes from the Gulf, and it has the greatest flexibility, in terms of being able to move producing rates up and down, of any natural gas supply area in the country. It is therefore essential that activities which add new supply and producing capability in the Gulf be encouraged - not discouraged.

One reason the Gulf is still such a prolific producing area after nearly 50 years of exploration and drilling in its shallower waters is the presence of independent operators.

I am testifying here today as chairman of the Offshore Committee of the Independent Petroleum Association of America, and I will tell you there are many definitions of "independent". However, if an independent is defined as one who is almost exclusively a producer of oil and gas - not a refiner, and not an affiliate of a pipeline or other large business - then 23% of Gulf of Mexico OCS production is operated by independents. That is up from 10% in 1986, the year oil prices fell dramatically, and this industry started shrinking.

My company, Newfield Exploration Company, is one of those independents. We did not exist ten years ago, yet today are among the top twenty operators of oil and gas production in the Gulf of Mexico.

We operate production volumes in the Gulf of Mexico of about 240 million cubic feet of natural gas and 16,000 barrels of oil daily. To put that in perspective, we produce enough natural gas to supply about one million households with their average daily gas consumption, and enough oil, which if converted to gasoline, to provide 14 gallon fill-ups to nearly 50,000 automobiles each day. Other independents in the Gulf produce even more.

We have only 63 employees on our payroll, but our total operating and capital expenditures during 1995 were approximately $120 million. We estimate that, at any one time, 800 to 1000 people are being employed on Newfield activity, not including any so called multiplier effect.

My testimony today is that independent operators in the Gulf of Mexico add value, and their presence should be encouraged. Independents get oil and gas to market that would be too risky to explore for or too costly to develop and produce for the majors. They bring a diversity of viewpoint that is essential in seeking the treasures that Mother Nature hides so well.

Here are some things I think you should consider to encourage and strengthen the presence of independents in the Gulf.

1. Amend the Oil Pollution Act of 1990. The law as written requiring every offshore operator to obtain a $150 million certificate of responsibility, under terms which few insurers are willing to meet, would make it difficult, if not impossible, for operators like Newfield to continue to operate in the Gulf.

2. Do not abandon area-wide lease sales. Area wide sales permit the diversity of viewpoint that comes from having many independents exploring the Gulf to get translated into the drilling of wells. To the extent that lease offerings are rationed, or large chunks of acreage are being held by companies beyond their primary terms with no drilling being done or required, independents lose the opportunity to drill, consumers lose the opportunity for increased supplies, and taxpayers lose the benefits of potentially higher OCS royalties. Make no mistake, oil and gas is found by drilling, and independents are, above all, drillers. Legislation and regulation should make it attractive to drill.

3. Continue to look at incentives such as deepwater royalty relief, where the tradeoff for less government revenue per barrel is more domestic supply, fewer imports, and more U.S. jobs. An example would be either a tax credit for or the immediate tax deductibility of geological and geophysical expenditures. Three-D geophysics has made this industry much more efficient, but it is a very expensive up front cost. Incentives to utilize more 3D would, in my judgement, result in more domestic oil and gas being found and produced.

Thank you for the opportunity to testify.

LUFKIN

Statement by

Douglas V. Smith
President & Chief Executive Officer

Lufkin Industries, Inc.

before the

Committee on Resources
United States House of Representatives

on the

Implications of Declining U.S. Oil & Gas Production

George R. Brown Convention Center
Ballroom C

Houston, Texas
February 2, 1996

Statement By
Douglas V. Smith
Before the
United States House of Representatives
Committee on Resources

February 2, 1996
Houston, Texas

I am Douglas Smith, President of Lufkin Industries located in Lufkin, Texas. I am pleased to offer testimony regarding the employment and economic implications of the trends in our domestic oil and gas industry. Our company offers a clear view of what it is like to supply equipment and services to the oil and gas industry. This oil service industry of suppliers is largely hidden to the public but we serve as critical members of the overall business to explore and produce gas and oil. We are not hidden to the communities that are homes to our warehouses and factories.

Lufkin Industries was founded in 1902 in Lufkin, located in East Texas. Since the mid 1920's our company has been the largest supplier of pumping units in the world. A pumping unit is used to pump oil from the well and it is probably the most visible and widely known piece of equipment to the public. Our products are found throughout the world but the biggest market has historically been in the United States. Although our primary manufacturing is done in East Texas, warehouses and service centers are located in several states.

The overall national data for job losses since the 1980's has been covered many times before. At a more local and personal level, almost 3,000 jobs have been lost since 1980 in Lufkin, Texas. This is in a town with a population just over 31,000 people. Understanding that the 1980 time frame was a unique time in the history of U.S. oil and gas work, it is meaningful to us that today there are 500 fewer jobs than in the 1960 - 1973 period that preceded the energy crisis of the 1970's. Further, approximately 80% of the jobs were related to domestic oil production during the 1950 - 1970 period while today only 30% of the jobs are tied to U.S. activity.

There is little to add to the volumes of data showing 40 year low levels of activity in the U.S. Our company is typical of many oil service companies that have spent the past 10 - 15 years consolidating operations and reducing costs while developing new markets and new products. Lufkin Industries is one of the few smaller companies that remains independent and operates as it traditionally has. Many independent equipment suppliers have merged or, through various transactions, moved into new configurations, almost always as a result of diminished oilfield activity and almost always leading to reduction of employment.

Our customers are the foreign national oil firms, the major U.S. oil and gas companies and the many independent oil and gas companies that operate primarily in the U.S. Our domestic business is tied to oil production, most on shore, and includes the marginal, or "stripper," wells that produce small volumes of oil each day. Those

small volume wells account for approximately 20% of total U.S. production. The viability of all the U.S. oil and gas operations, both small and large, ties to our company's opportunities in the oilfield. Our customers' problems with regulation, royalties, access and other issues are our problems eventually. They also become problems for our communities.

Oilfield equipment and service suppliers such as Lufkin Industries have had to respond to all the challenges that other manufacturers in the U.S. see in different industries. We meet competition around the world by investing and constantly improving our products and operations. We also make the hard decisions to cut costs and seek other opportunities.

The supply of equipment to an industry that produces commodities is complicated by the swings of supply and prices. In recent years the market for oilfield equipment in the U.S. has not had these normal swings but has taken on characteristics of a permanently smaller market. The economic challenges have driven innovation to reduce finding and production costs and only the efficient participants in the industry survive today.

Many companies, including Lufkin Industries, have invested in other areas of our economy that have greater economic promise, at least for now. We have essentially been forced to go other ways even though we are one of the standard brand names in the oil industry.

We count ourselves among those who believe that the U.S. still has great potential for oil and gas production and we plan to be a part of the industry regardless of what happens in the short term. We have stoically accepted the "rough and tumble" of the free market and taken the necessary action, but at a real price to employment.

I hope that my comments have helped to understand what it's like in the front lines of the oil and gas service industry. I have spent the past 24 years in those lines. I urge that you consider carefully the many initiatives that could increase production in the U.S. and impact the several issues of importation and balance of trade.

I appreciate the opportunity again to appear here today.

Thank you.

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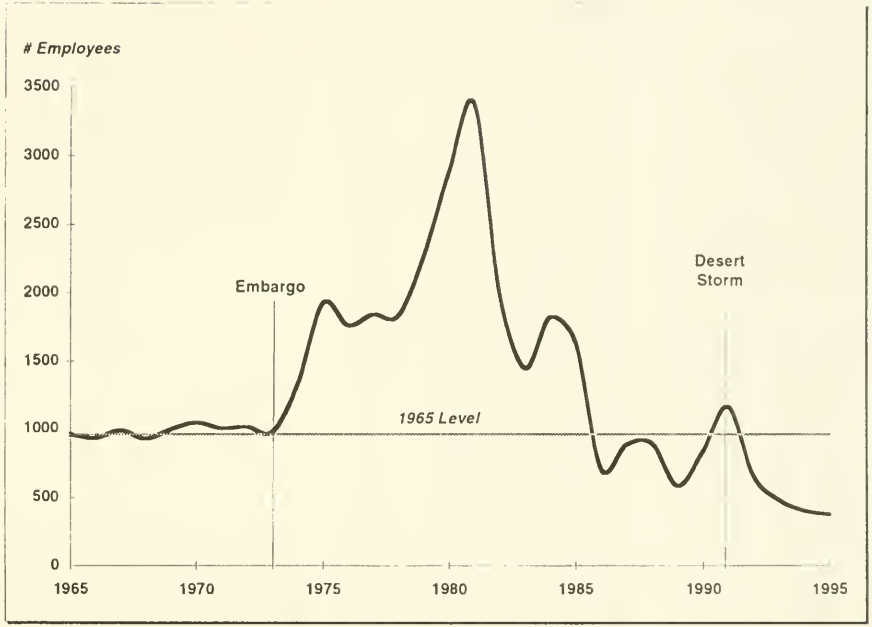
LUFKIN Oilfield Employment

To Manufacture, Sell, & Service Pumping Units



LUFKIN

CECIL E. NIX
BUSINESS MANAGER

INTERNATIONAL BROTHERHOOD OF
ELECTRICAL WORKERS
LOCAL UNION 460

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TESTIMONY AND COMMENTS BEFORE THE
COMMITTEE ON RESOURCES
U.S. HOUSE OF REPRESENTATIVES
HOUSTON, TEXAS
FEBRUARY 02, 1996

I very much appreciate this opportunity to attend this forum today, and to be able to bring before this committee a view of the impact, from a workers perspective, of declining oil and gas production and refining in the U.S. I believe that most everyone here today would agree with the premise that the U.S. oil and gas industry has suffered over the last twelve to fifteen years, and certainly those who have been the hardest hit are the hard-working men and women who have been displaced by the resultant corporate downsizing and cutbacks.

Everyone here would agree that the loss of jobs in the oil and gas industry is not an merely an apparition - these are real jobs that have been lost by real wage-earners and bread-winners. There may be some credence to the argument that other jobs have been created in the place of those lost. I would submit, however, that there have been two very telling statistics that I have seen in my preparation for this hearing: 1) that the jobs lost paid substantially higher wages than those created and 2) that virtually the only area of the industry that saw any "growth" - that is an increase in the numbers of jobs - were the low-wage jobs at service stations.

The thrust of these hearings, as I understand it, is to introduce information or thinking that would induce the United States government to establish a national energy policy that would effectively wean this country off it's dependance on foreign oil and gas products. A logical by-product of that process, in my estimation, would be the re-creation of those good-paying jobs that have been lost, and the resultant reinvigoration of a sagging economy that is the direct result of our dependence on any foreign goods.

According to studies by the American Petroleum Institute (API), and information from the U.S. Bureau of Labor Statistics, the petroleum industry suffered the loss of 467,700 jobs from February 1982 to May 1994 - a decline of 25% - with the greatest losses in the oil and gas field services (Table 1 and Table 2). Tables 3A and 3B reflect the assertion that all areas of the industry suffered substantial payroll losses, except for the gasoline service station area.

I am certain that this hearing will produce reams of paper containing tables, graphs, and information that will serve to enlighten some, shock others, or in many cases, serve only as doorstops or ballast. The fact is that any statistical information submitted to this body will certainly be hammered and molded to serve the interests of whomever would take the time to fashion it.

The reality of the decline of the U.S. oil and gas industry is that people who once enjoyed good jobs at livable wages - wages that allowed them to buy a home, feed and clothe their families, and send their kids to college - can no longer expect to be able to do those things. Construction workers, refinery operators, longshoremen and roustabouts know that they cannot afford to live the American dream on service station attendant wages. Secretaries, lab technicians, and mechanics know that jobs as bread-route salespeople or telemarketers for lawn services will not sustain this great country!

Our quest, as leaders in our various industries and organizations, must be to challenge those of you in government to take on the very difficult task of, quite literally, rebuilding a disappearing industry, and along with it the means of achieving the American dream for those who elect you as their representatives. My quest as a labor leader, is to offer leadership and motivation to workers so that they can identify and support those elected officials who will take on these tasks, and to be a catalyst in any debate with those who will not.

No longer can we sit by and watch as this industry - with so much promise and potential for jobs and prosperity for our great nation - is quartered up and sold off to other countries that would then use petroleum products to hold us hostage. The citizens of the United States of America, with all it's vast natural and human resources, deserve to have leaders with enough foresight and integrity to stand foresquare on the side of wage-earners who, together with capital investors, have toiled to make this country the greatest on earth.

The real story of the shameful state of the oil and gas industry, and the lack of a national energy policy the encourages American companies to produce jobs for Americans, will not be found in the tables and graphs presented here today. The real story will be found in the faces of those who are standing in line down at the Texas Employment Commission, looking for work, hoping to be able to once again earn enough to afford to live again - to feed and house their families, buy new cars, and generally feel that their generation is doing better than their parents' generation did, and that the next generation will be able to do even better! The real story, in simple terms, is in the American consumer's struggle to be able to afford the hundred dollar tennis shoes their children want to wear - shoes made from petroleum produced and refined virtually everywhere in the world except the USA!

Table 1. U.S. Petroleum Industry Employment by Segment, 1981 and 1993

	Employment (in 000s)		Employment changes between 1981 and 1993	
Segment	1981	1993	Number	Percent
Oil & Gas Field Services	430.2	171.4	-258.8	-60.2
Oil & Gas Production	254.3	166.2	-88.1	-34.6
Petroleum Refining	172.8	115.7	-57.1	-33.0
Petroleum Wholesaling	231.5	178.2	-53.3	-23.0
Gasoline Service Stations	562.2	614.0	51.8	9.2
Oil Pipelines	21.8	17.7	-4.1	-18.8
Gas Production & Distribution	174.0	161.6	-12.4	-7.1
Paving and Roofing	28.9	28.0	-.9	-3.1
Total	1,875.7	1,452.8	-422.9	-22.6

Employment is the average number of employees for indicated years, including production workers. For proportion of non-production workers see Figure 3 below.
Sources: API, *Basic Petroleum Data Book* and U.S. Department of Labor, *Employment, Hours and Earnings, United States, 1981-1993* and Employment and Earnings, March 1994, Table B-12.

Table 2. U.S. Petroleum Industry Hourly Earnings by Segment

Segment	Production Workers Average Earnings($/Hour)			
	1981	1993	Change	
			$	%
Oil & Gas Field Services	9.14	12.29	3.15	34.5
Oil & Gas Production	10.76	17.22	6.46	60.0
Petroleum Refining	12.17	20.36	8.19	67.3
Petroleum Wholesaling	9.04	10.62	1.58	17.5
Gasoline Service Stations	4.83	6.66	1.83	37.9
Oil Pipelines	11.50	19.51	8.01	69.7
Gas Production & Distribution	9.10	16.30	7.20	79.1
Paving & Roofing	8.64	13.77	5.13	59.4

Average hourly earnings include basic hourly rates, incentive wage rates, premium pay for overtime and late shift work.
Source: U.S. Department of Labor, Employment, Hours and Earnings, United States, 1981-1993, August 1993, and Employment and Earnings, March 1994, Table B-12.

Table 3A. Petroleum Industry Payrolls, 1981-1993.

Segment	Annual Payroll ($ Millions) 1981	1993	1981-93 Payroll Change (1992 $ Millions)	Percent
Oil & Gas Field Services	13,836.5	5,512.7	-8,323.8	-60
Oil & Gas Production	13,843.8	9,047.8	-4,796.1	-35
Petroleum Refining	8,989.6	6,019.05	-2,970.5	-33
Petroleum Wholesaling	7,139.1	5,495.4	-1,643.7	-23
Gasoline Service Station	7,371.1	8,050.2	679.2	9
Oil Pipelines	1,120.9	910.1	-210.8	-19
Gas Production & Distribution	7,370.6	6,845.3	-525.3	-7
Paving & Roofing	1,045.0	1,012.5	-32.5	-3
Total	60,716.5	42,893.0	-17,823.5	-29
Total Excluding Gas Stations	53,345.4	34,842.8	-18,502.6	-35

Methodology: To arrive at Payroll for "Total Employment" the total number of employees for the years 1981 and 1993 for each SIC code was multiplied by the 1992 annual wages. 1992 average annual wages were derived from Table 2 in Employment and Wages Annual Averages March 1992. From Table 2, 1992 total annual wages in thousands was divided by average annual employment to arrive at average annual wages.

Sources: API *Basic Petroleum Data Book*; U.S. Department of Labor, Employment, Hours and Earnings, 1981-1993 August 1993 and U.S. Department of Labor, Employment and Earnings March 1994 and U.S. Department of Labor Employment and Wages Annual Averages, 1992 October 1993

Table 3B. Petroleum Industry Payroll Losses Due to Segment Shifts

Segment	1993 Actual Average Employment (000s)	1993 Average Employment Assuming Average Job Loss (000s)	Difference in Employment (Columns 1 - Columns 2) (000s)	Payroll Effect Due To Segment Shifts (1992 $ Millions)
Oil & Gas Field Services	171.4	333.0	-161.6	-$5,986.7
Oil & Gas Production	266.2	196.8	30.6	$1,067.4
Petroleum Refining	115.7	[illegible]	-18.0	-$538.9
Petroleum Wholesaling	178.2	179.2	-1.0	-$43.3
Gasoline Service Station	614	435.1	178.9	$2,345.6
Oil Pipelines	17.7	16.9	0.8	$32.7
Gas Production & Distribution	161.6	134.7	26.9	$1,150.5
Paving & Roofing	28	22.4	5.6	$203.6
Total				-$1,911.9
Total Excluding Service Stations				-$4,346.6

Methodology: The employment estimate is calculated assuming that all sectors of the petroleum industry uniformly suffer a loss of 22.6 % of their 1993 average annual monthly levels of employment. To arrive at the difference in employment due to segment shifts, the hypothetical employment projection (column 2) was subtracted from the 1993 actual level of employment (column 1). The difference in employment due to segment shifts is shown in column 3. In the fourth column we multiply the difference in average monthly employment by the 1992 wages to arrive at the payroll change due to segment shifts.

Sources: API, *Basic Petroleum Data Book*; U.S. Department of Labor, Employment, Hours and Earnings, 1988-1993; August 1993; U.S. Department of Labor, Employment and Wages Annual Averages, 1992, October 1993; U.S. Department of Labor, Employment and Earnings, March 1994.

STATEMENT BY
R.H. "Bobby" Rawle,
Vice President and
Group Executive,
North American Operations
J. Ray McDermott
before the
COMMITTEE ON RESOURCES
United States House of Representatives
on the
Implications of Declining U.S.
Oil and Gas Production

Ballroom C, George R. Brown Convention Center
Houston, TX
February 2, 1996

Mr. Chairman, members of the Committee, my name is Bobby Rawle, Vice President and Group Executive of J. Ray McDermott North America Operations. I appreciate your invitation to appear today before the Committee to discuss the economic impact that development of oil and natural gas has on contractors such as J. Ray McDermott and the local communities that serves the industry. Although you asked me to comment on the impact of declining production, I've chosen to emphasize a more positive approach. Specifically, I will outline today what I consider to be one of the few remaining frontiers of the United States oil and natural gas development industry, the deep water Gulf of Mexico, and why we must develop the Gulf resources in order to reverse the present trend.

J. Ray McDermott pioneered the construction and installation of the first platforms and pipelines on the outer continental shelf in the Gulf of Mexico and, today, provides services to the offshore oil and natural gas industry worldwide. The company designs, engineers, fabricates, and installs fixed and floating platforms, pipelines, subsea systems, and other facilities which support drilling and production. J. Ray McDermott is an integrated offshore services company which operates the largest fleet of marine construction equipment in the world.

At the outset, I would like to convey my appreciation of this committee's initiative last year in pushing through the House of Representatives a very beneficial and effective incentive for our industry, the Deep Water Royalty Relief legislation. Your efforts will certainly increase production. Even though the regulations have yet to be written into a final rule, oil companies are already applying with the MMS for royalty relief for their deep water leases. Without royalty relief, these cost-intensive leases probably would not have been developed. Such government incentives will maintain, and even increase, our domestic production and our oil patch work force in the future.

As you know, the deep water area of the Gulf of Mexico has estimated reserves in excess of 12 billion barrels but it presents a challenge to industry and the Government to develop cost effective technologies and policies to recover these resources. Deep water drilling and the associated costs of recovery increases exponentially with water depth. McDermott fabricated the deck; performed the hull to deck mating; installed the platform and laid the pipelines on the deepest project in the world todate - - the Shell Auger Tension Leg Platform which is currently producing in 2,800 feet of water. This massive project helped support over $400,000,000 in contracts in 30 states across the United States, "Attachment one" of my statement includes a map which breaks down those contracts by state. The Gulf states were awarded the lion's share of work, but I believe it is vital to point out that the oil business in not confined to this one area of the country. This project drew from an employment pool consisting of a variety of skill levels from entry level to Ph.D. engineers. To illustrate the magnitude,

Shell Oil supplied me with this graphic which superimposes their second TLP the MARS platform over Houston. As is clearly seen, development in the deep water of the Gulf of Mexico demands complex solutions.

Although a success story, only 3% of leases issued in over 650 feet of water are currently being developed which leaves employment opportunities in oil and oil service industries greatly depressed when compared to those of the early 1980's. Overall, employment in the petroleum industry fell from over 1.8 million workers in 1981 to about 1.4 million workers in 1993. McDermott's domestic operation unit is a prime example of this trend. In 1981 our fabrication facility employed 3059 people. By 1987 we saw employment drop to 391. Wage rates and benefits were reduced as McDermott entered a survival mode with the rest of the oilfield service industry. In 1996, as a result of some guarded optimism in deep water production, our yard employs 1170 workers and our hourly rate of pay for skilled labor has just returned to 1982 levels. Research has shown that for every job created offshore, 10 jobs are created onshore. However, the great bust of the late 1980's and the cyclical nature of the business has greatly damaged the labor pool from which we draw. Additionally, votech schools have seen a decline in people seeking training in skilled crafts. Only steady growth and stability will result in reviving the industry and local economies that depend on it.

In 1993, DRI-McGraw Hill conducted a study which showed that an active exploration and development program in the deep water Gulf of Mexico could create up to 100,000 new jobs with up to 80,000 of those sustained beyond 25 years. In order to achieve this goal, almost every major name in the offshore development business in the U.S. has begun to participate in project DeepStar. DeepStar is an industry-led effort to cut costs and improve technologies which will make development in waters up to 6,000 feet an economic reality. Just as the U.S. space program progressed from the first Mercury missions to the eventual Apollo missions and lunar landings, DeepStar will create radically new methods of resource recovery. Today, I am enthused to report that, under project DeepStar, companies are sharing an unprecedented amount of information and have agreed to collectively determine a development strategy for the deep water Gulf of Mexico.

Like the space program though, these goals may not be accomplished without some Government incentive. The development of high risk technologies for a complex integrated system of hardware and science will require expertise throughout the United States. Although I realize your committee does not have jurisdiction over the Department of Energy's budget, we might suggest that a

pilot program be created within DOE for the purpose of specifically researching deep water development and I would ask that if and when the appropriate congressional committee conducts a hearing on this issue, we would be invited to further comment on that program.

In summary I would like to conclude my remarks with a few thoughts:

- One of the only remaining frontiers to dramatically increase oil and natural gas output in the United States is in the deep water of the Gulf of Mexico

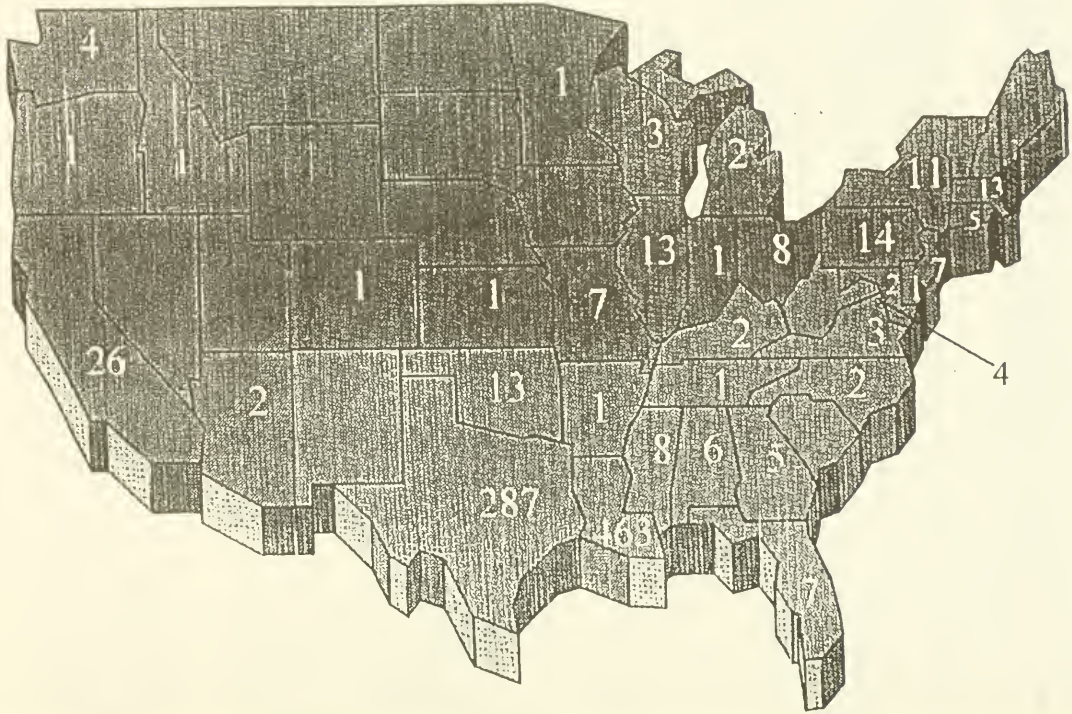
- The exponential costs and technology demands for developing finds in up to 6,000 feet of water can only be achieved through increased partnering, teamwork and innovation within the private sector and private sector partnering and teamwork with the United States Government

- Increased offshore activity will help stem the flow of increased imports, will create thousands of skilled workers, and will increase revenues to the United States Treasury through royalty payments and income taxes

- New technologies will not only have other domestic applications, but if the United States takes the lead in deep water technology development, we will be able to export these skills worldwide.

Mr. Chairman, members of the Committee, thank you for affording me this opportunity to present testimony before this distinguished panel and I will be glad to answer any questions you may have at this time.

AUGER VENDORS BY STATE



Testimony of

Robert A. Mosbacher
Mosbacher Energy Company

before the

Resources Committee
U.S. House of Representatives

February 2, 1996

Good afternoon. My name is Robert Mosbacher. I am Chairman of the Mosbacher Energy Company located here in Houston.

Mosbacher Energy Company has been active in the business almost 50 years and has drilled and produced oil and gas from many hundreds of wells in Michigan, Ohio, the Rockies, West Texas and the entire Gulf Coast area both onshore and offshore, as well as in Canada, Venezuela, the U.K., India, Tunisia and Indonesia.

I also had the privilege to serve President Bush and the American people as Secretary of Commerce, and I hope that I can bring a somewhat different perspective to these hearings in light of my experiences in Washington and my experience as a Texas oilman for almost 50 years.

I am pleased to appear before you today to discuss the economic and employment implications of falling domestic production and the plight of the domestic producers. I am delighted that the Committee has chosen Houston to begin its series of hearings over the coming year. Houston continues to be the center of the domestic oil and gas production industry and is the best place to focus the nation's public attention on the future resource potential of the Gulf of Mexico--the nation's oil and gas "breadbasket."

I am proud that I have producing properties in an industry that currently operates more than 860,000 wells in 33 states, supplying about 2.6 billion barrels and nearly 19 trillion cubic feet of natural gas annually. There have been more wells drilled in the U.S. than in the rest of the world combined. But in an environment of sustained lower oil prices, each and every one of us at this table must operate more efficiently than ever before and exercise more care and caution about capital investments. The ability to undertake projects with greater risk has diminished, as the exploration and production industry needing to attract new investment capital has to be more conservative to meet the harder and harder challenge of creating value for stockholders and the larger investment community.

Over the past decade, declining domestic oil production has meant U.S. oil imports at dangerous levels. The need to purchase foreign oil constitutes a very significant portion of the U.S. deficit balance of trade, and thus the higher indirect costs of imported oil adds to the ills that spin-off. It was only a few short years ago that I recall reading estimates that this nation was spending almost 2 million dollars every fifteen minutes to buy foreign oil.

As Alaskan production naturally declines over the coming years, we must, as a nation, seek to meet our energy needs in ways that are realistic and are achievable from new sources that have the potential to make real contributions. The Outer Continental Shelf has the potential to go a long way to meet our future energy needs. The OCS already provides about one fourth of the nation's natural gas and about one-eighth of its crude oil. Estimates of undiscovered Federal OCS oil reserves that could be recovered using current off-the-shelf technology have been as high as 18 to 20 billion barrels. At the same time, the similar scenarios for natural gas reserves have been upwards of 150 trillion cubic feet.

What I have seen of the evolving international economy over the last decade leads me to conclude that in an ever shrinking and interdependent world, it is more important than ever to do a better job of managing our nation's resources. Increasingly around the world, there are more and more governments that are adopting flexible policies and programs to provide for their secure energy futures. They have put in place flexible government programs to facilitate private sector business negotiations to develop indigenous resources, and corollary flexible contract requirements, fiscal regimes and even regulatory policies aimed at easing development opportunities and ensuring that exploration and production proceeds.

Of all the countries in the world endowed with oil and gas, only we seem less than willing to try and develop and enhance our vast petroleum potential. At every turn federal programs, policies and regulations seems intent on slowing the pace of exploration and development. I have been in this business for a very long time, and I have a good number of wells throughout this state. But exploring for new oil and gas, given the current economics of this industry, is becoming increasingly more attractive overseas where foreign efforts and flexibility that I just spoke about create greater opportunity and incentives than at home.

I believe that it would be in our own best interest to begin to look at adopting policies and programs that could reverse this trend and provide more opportunity for domestic exploration and production activity. But, this is not a short term problem, rather it is a long term commitment. Over the long term, it would mean a significant reversal in public opinion regarding the role of the federal government in the encouragement of domestic oil and gas exploration and production activity. Reducing the tax and regulatory burden on the petroleum industry over the long term would surely bring about quantifiable benefits to our economy and security interests.

Energy policies that could reverse the trends of declining domestic exploration and flight of capital to foreign projects would have to be put into effect. The current miss-match between costs and benefits of many safety and environmental regulations that we are saddled with today preclude spending money in the U.S. Legislative review and reversal of "command and control" environmental regulations should instead be considered, providing regulatory flexibility with goals such as achievable standards and a return to trusting the ingenuity of business to meet these goals at the lowest cost.

Environmental protection can be achieved without sacrificing economic growth. API recently estimated that regulatory proposals to impose new federal environmental requirements on the exploration and production industry will result in costs in excess of $14 billion dollars over the next five years, with little perceived environmental benefit! It will also result in the loss of nearly 6% of both oil and gas production by the year 2000 and in turn reduce the revenue to federal and state treasuries by as much as $9 billion, losses to be made up by other sources of public tax revenue streams. In addition, these new federal environmental requirements could cause the loss of nearly 55,000 jobs throughout the economy.

Without greater access to federal lands, finding and developing new oil and gas resources is like trying to feed a herd of cattle from a hand bucket. You know it's not going to be a success! And so we have handicapped ourselves by placing off-limits some of the most promising and richest resources based both onshore and offshore.

And what would we, as Americans, get in return for efforts that stimulate incremental oil and gas production? Well, we would get more domestic oil and gas, greater economic activity, create jobs, increase royalties and other tax revenue to the Treasury, reduce the trade deficit, help further strengthen our currency abroad and reduce our reliance and ultimate vulnerability to imports.

Testimony Submitted by Garry Mauro
Texas Land Commissioner
Before the
U.S. House of Representatives
Committee on Resources
February 2, 1996

It is a pleasure being here with you today. I am a Texan. My agency leases state land for oil and gas production. We have over 18,000 producing wells on that land. So it is no surprise that I share this Committee's concern about the economic vitality of our nations' oil and gas industry. I applaud your efforts to explore what additional steps the federal government might take to strengthen our domestic industry.

At the outset, we in Texas should recognize that the demand of the American people to balance the budget has reined in the ability of both the Administration and the Congress to provide additional tax incentives to stimulate domestic production. Any one of us would be hard pressed to find any Member of Congress from either side of the aisle who would argue that such tax incentive legislation would successfully garner a majority of votes, either in the House or the Senate, either now or in the immediate future. Those were solutions we pursued in the past and do not apply to the present or the future as I see it.

As we face the energy challenges of the 21st Century we must set aside politics and find ways to strengthen our economy, protect our environment, and keep our nation secure. We need leadership that looks ahead; listens as well as leads.

I believe that the Clinton Administration listened to those of us in this region and has begun to reform the regulations and requirements that unnecessarily increase costs of exploration and production. With leadership from President Clinton the Administration has an across the board program to reform the government's regulatory system -- to impose the least burden without sacrificing rational and necessary protection. The Secretary of Energy has stressed that a new approach to regulation was needed -- one which carefully compared the cost and benefits of regulation and created partnerships with the private sector. I know from personal experience that the President seeks a collaboration in which oil and gas executives are treated as partners on energy matters, not adversaries.

I also know this Administration seeks to align its energy priorities with four national goals in mind: (1) satisfying the nation's energy needs, (2) reducing our vulnerability to oil shocks, (3) protecting the environment, (4) improving the economy.

To get these goals we must have a viable oil and gas industry. Even as the federal government and its budget as a whole are being sizably cut, specific initiatives are being undertaken to increase domestic production of energy resources on public lands and the Outer Continental Shelf by lowering the cost of exploration and production.

I do not believe the government can, or should, take actions to raise gas and oil prices and thereby strengthen our domestic industry. Each time it has tried, it failed. But government can help drive down the energy industry's operating costs by funding industry-driven R&D programs to develop advanced, cost-effective exploration, production, processing and environmental compliance technologies. Additionally, it can blaze a cooperative trail, collaborating with industry, key states and other agencies to lift regulatory barriers and provide royalty relief to increase domestic production on federal lands and stimulate markets.

Thanks to the efforts of people in this room the Administration has championed market initiatives to enhance our energy production and to revitalize our petroleum industry. We spoke up and someone listened! Programs have been redirected to pursue cost-effective policies to slow the incoming tide of oil imports by diversifying our energy portfolio on both the supply and the demand side. President Clinton recently signed deep water royalty relief provisions for the Central and Western Gulf of Mexico -- one of America's best opportunities for adding large new domestic oil and gas reserves. This was good news for the supply and service industry. It will mean good jobs at good wages for Texas workers.

The Department of Interior with help from the Energy Department is developing royalty relief for marginal oil and gas wells located on federal onshore lands. I understand reduced royalty rates for heavy oil produced on onshore federal lands is now in the final stages of review by the Office of Management and Budget. Leasing policies and royalty rate structures governing oil and gas properties on the Outer Continental Shelf (OCS) now provide incentives for operators to extend the production from marginal wells, as well as to develop new projects in marginal areas and in deep waters.

Relief for deepwater facilities operating in the Central and Western Gulf of Mexico is available for production from new and existing leases in water depths 200 meters or greater. On new leases, the royalty relief is automatic. On existing leases the Secretary of Interior has the authority to grant relief, if it is determined the lease would not be otherwise developed. Prudently, the royalty holiday will be rescinded for any year in which the price of West Texas Intermediate averages $28/barrel, or higher ($3.50/Mcf for gas).

The Administration estimates these relief provisions will add 15 billion barrels of oil equivalent to our domestic resource base. Additionally, new drilling platform construction and increased exploration and production activity in the Gulf of Mexico will provide 160,000 jobs to Americans in Texas, Louisiana and Mississippi. Over and above those achievements, the measure will bring in an estimated $200 million in bonus and royalty payments to the U.S. Treasury. Quite simply, this means we diminish the trade deficit by using domestic energy, create good jobs and increase revenue to cut our federal deficit.

In another innovation the Administration has directed the MMS to investigate collecting "in kind" royalty payments from operators on Federal lands; providing more flexibility in how payments are made. This is something we do successfully in Texas at the General Land Office. A 1995 federal pilot program, that could result in significant cost savings to both industry and government, allowed payments with barrels/mcf of oil/gas produced rather than a percentage of gross revenues received for the total oil/gas produced and sold. Not only does this give the operators more flexibility, it simplifies the royalty collection process. We are proud to have blazed the trail on this.

Let me add a word on the red-tape problem. In a meeting with independent producers in 1995, President Clinton stressed the need for royalty fairness and simplification that works for both the operator and the government. I am pleased that provisions on royalty fairness and simplification are being considered for inclusion in a final balanced budget agreement, as well as in stand alone legislation. I understand the House Energy and Mineral Resources Subcommittee and the Senate Energy and Natural Resources Committee have scheduled mark-ups in the coming weeks on specific legislation to this effect.

We have seen a federal commitment to support the R&D efforts of the industry and several important accomplishments in areas that directly impact domestic petroleum production. New technologies can significantly increase and, in many instances, prolong production from the OCS and Federal onshore lands allowing the state and Federal governments to capture additional royalty revenue. A few illustrations include:

* Scientific data and methods have been developed to help State and Federal agencies make more rational, science-based, risked-based regulatory decisions. In Texas, DOE, in cooperation with the Texas Railroad Commission, developed a methodology for streamlining the permitting requirements for injection wells in East Texas that will save oil and gas producers an estimated $86 million in Safe Drinking Water Act compliance costs over a five year period.

* DOE is working with the states and the Department of Interior to streamline and simplify regulations applicable to the oil and gas industry. For example, DOE conducted a Public Lands Project with Bureau of Land Management and four western states to streamline oil and gas regulation on federal lands, while speeding up permits and approvals.

* DOE developed a risk-based data management system for use by States to enable them to implement more cost-effectively their Underground Injection Control Programs. After reviewing the potential savings, 25 states have agreed to help each other implement the system.

* Working with R.T. Corporation, Penn State University, MVP Production, Lumitox and others, DOE is developing lower cost produced water treatment and disposal technologies that will enable independent oil and gas producers in various parts of the country to design and build treatment systems with inexpensive, locally available materials.

Working with independents, majors, and service companies, DOE's Advanced Computational Technology Initiative (ACTI) is designed to apply the world-class computing capabilities of DOE's National Laboratories to problems in the oil and gas industry. Applications such as processing massive amounts of seismic data and 3-dimensional simulation require ultra-high speed processors and new algorithms not currently available in the industry. Through a competitive solicitation, an industry panel reviewed and selected cooperative projects worth a total of $65 million that will team companies and national laboratories to develop new applications of these technologies and skills. Examples include:

* Advanced Computational Models for Deep Water Oil & Gas Production utilizing capabilities at Sandia National Laboratory to predict stress on risers and umbilicals, and to develop techniques to determine feasibility of using composite materials.

* Single-Well Seismic Imaging of Salt Dome Flanks utilizing capabilities at Sandia National Laboratory to improve imaging of salt surfaces and reservoir terminations, and velocity control for prestack imaging of surface data.

* Gulf of Mexico Subsalt Seismic Imaging Project utilizing capabilities at Los Alamos National Laboratory to demonstrate the use of high speed computers to obtain better velocity determination and perform 3-dimensional prestack depth migration.

DOE's Oil Reservoir Class Program is designed to utilize advanced reservoirs characterization techniques to extend the economic life of domestic reservoirs in danger of being prematurely abandoned. Through competitive solicitations, 34 cost-shared projects worth a total of $295 million, each involving teams of producers, service companies, and universities, were selected to develop and transfer technologies to other producers. Examples of these projects are:

* DOE, working with Lomex Exploration, has shown that advanced reservoir imaging technologies, applied in oil basins whose complex geology made oil recovery difficult, could be used to pinpoint previously undetected compartments and to economically produce previously unrecoverable oil. Since this activity is on federal lands, the Lomex project alone will result in a public benefit of over $12.7 million in taxes and royalties based on revenues from producing 2.4 million barrels of oil. Because of this success, 11 additional waterfloods will be undertaken in neighboring fields without government support, which should generate additional minimum reserves of 31 million barrels of oil, over half a billion dollars in direct revenues, and additional tax and royalty revenue larger than the cost of the entire Reservoir class program. Since these 11 projects will only evaluate 13 percent of the area, reserves could easily double or triple.

* Working with Michigan Tech and Tierra Energy, DOE successfully demonstrated that horizontal drilling technology could significantly increase production from oil wells threatened with premature abandonment. One test project in the Crystal Field in Michigan could lead to an additional 8 million barrels of production alone.

* DOE and Russell Petroleum and the University of Kansas have developed low cost water filtration technology called air floatation that will remove solid impurities from water reinjected into oil reservoirs and permit the recovery of hundreds of thousands of barrels of oil that otherwise would have been left in the ground.

* It has also been shown that advanced reservoir imagining technologies, applied in oil basins whose complex geology made oil recovery difficult, could be used to pinpoint previously undetected compartments and to economically produce previously unrecoverable oil.

In the face of stiff global competition, it is absolutely critical that our government foster technological innovation to keep our U.S. energy industry globally competitive. Such strategies to develop new technologies to lower the cost of developing our domestic resources are essential because our international competitors are partnering with their private sector entities to gain a competitive edge over other firms from around the world.

Our nation's investment in research and development, both public and private, has made an enormous contribution over the last five decades to our standard of living and to our preeminence in the world. It is a major driver of our economic growth and a creator of jobs. Federally supported energy R&D is a critical component in our overall national R&D mix -- significantly contributing to our energy security, economic strength, environmental quality, and scientific and technical leadership. More can be done to make our energy R&D programs more efficient and more responsive to future needs for new and improved energy technologies both here at home and around the globe, but working together -- government and industry -- can ensure that the U.S. remains at the forefront in energy science and technology to drive down exploration and production costs even further in the years ahead.

As I said at the outset, government should not and cannot effectively set a price for oil and gas in a free market economy. But it can work with industry to drive down costs and assure a healthy energy sector in a competitive economy.

I am an optimist by nature, but good numbers on leases we let for drilling on state land make me feel even better. We have some coming from the Western Gulf of Mexico. Last year's lease sales, both federal and state surpassed anything in recent years. Also, Offshore magazine reports that global rig utilization is higher today than at any time in the past 10 years. Day rates have been ranging 30 - 50% higher in the Gulf than in previous years for state of the art equipment. Prices are low, I know, but we are finding ways to work within the complexities of the market and the complexities of a government-industry partnership.

While there is good news from the Gulf and there are solid accomplishments the Administration and the energy industry can point to, there are also many challenges still to meet.

We have some heavy economic and political lifting to do on natural gas utilization. The federal government, the oil and gas industry and the automobile industry are still going in circles on conversion of fleets to alternative fuels such as CNG and propane.

The EPA's wish to put some order in classification of toxic release is understandable. We who live in this region and understand the risks and benefits associated with oil and gas production need to speak constructively on how that classification is to be conducted.

I could add pages to this by addressing our challenges south of the border. We need to build bridges of cooperation to Mexico, especially on natural gas. We in Texas understand our neighbor, respect its history and sovereignty. We can trade and share know-how and technology to our mutual benefit without compromising our birthright.

Finally, let me say as a Texas official that I have found an open door and a ready audience in DOE, the Interior Department and the White House. I must say when he was at DOE Bill White made it easier, but the doors are still open. Bob Armstrong is at Interior. With friends in the Administration and the help of friends in Congress the perspective of this industry can be set forth and we can continue working to build an healthy, competitive energy economy.

DECLINING DOMESTIC OIL AND GAS PRODUCTION -- EMPLOYMENT AND ECONOMIC IMPLICATIONS

A Background Briefing Paper for Media Use

Energy is the engine of society. For the foreseeable future, petroleum will continue to be vital to both the U.S. and the global economy. **All credible future world energy projections** agree that oil will play a major role in global commerce and industry well into the next century. No other energy source offers quite the same advantages of transformability and transportability. Future oil and gas demand in the U.S. is also projected to rise well into the next century. However important alternative energy sources eventually may be, oil and gas will continue to be a major energy source for the remainder of this as well as for the next generation of Americans.

FALLING DOMESTIC PRODUCTION/RISING IMPORTS

Domestic oil production is in a long term decline. In 1995, crude oil production averaged 6.52 million barrels per day, the lowest production since 1954, and by year end production had dropped to 6.4 million barrels per day. This is a direct result of the decline in domestic exploration - if we don't look, we won't find replacement reserves. Both well completion rates and drilling rates for exploratory wells are at post-World War II lows, indicating that our domestic production rate will likely continue to decline dramatically. The domestic oil industry has already lost nearly 500,000 jobs in the last decade - that's more than the auto, steel and textile industries combined.

As a result of falling U.S. oil production, imports of foreign oil are increasing, averaging more than 7.9 million barrels per day through the first ten months of 1995. Imported oil now accounts for almost half of our consumption and in recent years, has accounted for from 30 to 67 percent of our foreign trade deficit, depending on oil prices. The Department of Energy projects that by 2015 imported oil will average between 9.1 and 9.7 million barrels per day and comprise as much as 68 percent of our consumption.

TRADE DEFICIT INCREASES AND JOBS LOSSES RESULT

Declining domestic oil production is a major factor in the Nation's chronic trade deficit. The U.S. now imports over 8 million barrels of oil per day, nearly 50% of our domestic consumption, at a cost of **one billion dollars per week!** Each and every barrel of domestic production decline is replaced by an imported barrel of oil, even as more fuel-efficient automobiles roll off the line each day. At present prices, each 100,000 barrels per day that can be produced domestically to displace imports will decrease the trade deficit by $600 million annually. That's money we could keep within our economy to keep Americans working here at home.

At current volumes, imported oil denies many American citizens good economic opportunities. Jobs in the oil and gas industry are among the highest paying jobs in the

Nation. Each million barrels of foreign oil we import annually results in the loss of about 60,000 domestic jobs. Looking at this from another perspective, reversing the decline in oil and gas production would create 10,000 new jobs here at home for each one billion dollars (one week's supply) of imported oil displaced by domestic crude or natural gas equivalent.

OTHER INDUSTRIES AFFECTED

The U.S. economy is diverse and many different segments are complexly linked. A decline in one industry can break the chain that ties several industries together. As the oil industry deteriorates, parts or in some cases most of the associated industries will decline as well.

On the front end of the multi-faceted oil and gas business, the banking and finance sectors of the economy raise and deploy the capital necessary to support these enterprises. Once investment packages and deals are brokered, the support services arm of the industry cranks into motion providing labor, supplies, equipment, and specialized technologies such as three dimensional seismic surveys and horizontal drilling.

Oil and gas extraction is the base for a number of enterprises including refining, petrochemicals, pipeline transportation and rubber. All of these activities consume large amounts of steel and other metals; thus, they support such businesses as metal mining, processing and fabrication. Each of these industries also require large capital investments which supports major construction activity as well as development and manufacture of high-tech machinery.

ARE WE OUT OF OIL?

According to many geologists and petroleum engineers who work in America's oil and gas industry, our nation's oil and gas resources are abundant. They predict as much oil and gas will be found and produced here in the future as has been produced cumulatively from Colonel Drake's first well in 1859 to present day. Recent estimates of this resource (including proven reserves) indicate total supplies of 204 billion barrels of oil and 1,295 trillion cubic feet of natural gas -- about half in known fields and half from new discoveries. This is enough to sustain a sizeable domestic oil and gas industry for more than 50 years.

Technological breakthroughs have enabled the industry to find more oil and gas, significantly lowered finding costs, and increased the amount of oil that can be recovered. Use of new three-dimensional seismic data allows oilmen to "see" oil traps formerly invisible, drilling techniques such as horizontal drilling have reduced the number of production wells while increasing the amount of oil recovered per well, and recovery techniques such as carbon dioxide flooding have increased the recovery rate. Technological innovation has increased the ultimate amount of oil which can generally be recovered from a field by 15 to 20 percent since the 1980's.

Due to declining tax revenues from oil and gas operations and social costs associated with rising unemployment within the industry, major oil-producing states have recognized the vital importance of domestic production. These states have taken a pro-active role in designing incentive programs which encourage exploration and new production, enhance production from existing wells, and rejuvenating production from abandoned wells. These imaginative state strategies for increasing domestic oil and gas production provide a stark contrast to the vacuum in which Federal energy policy makers are operating. It's time for the federal government to follow the lead of the states.

CONCLUSION

The U.S. must re-examine the federal role in encouraging domestic production since in many cases, federal policies actually discourage domestic oil and gas production. However important alternative energy sources may eventually become, oil and gas will continue to be a **major source of energy** for the remainder of our lifetimes as well as for the next generation of Americans. With a shortage of good jobs in the U.S. economy, federal policies should strongly encourage domestic production of competitive reserves to provide well-paying jobs for Americans to produce a commodity which is vital to our Nation's interests. America needs the kind of jobs that oil and gas create -- high pay with good benefits. If we imported half of our daily foodstuff, there would be immediate calls for action in Congress to for an agricultural revitalization program. Energy is no less important to our security and high-quality standard of living, and our national policy should recognize this.

DOMESTIC RESERVES

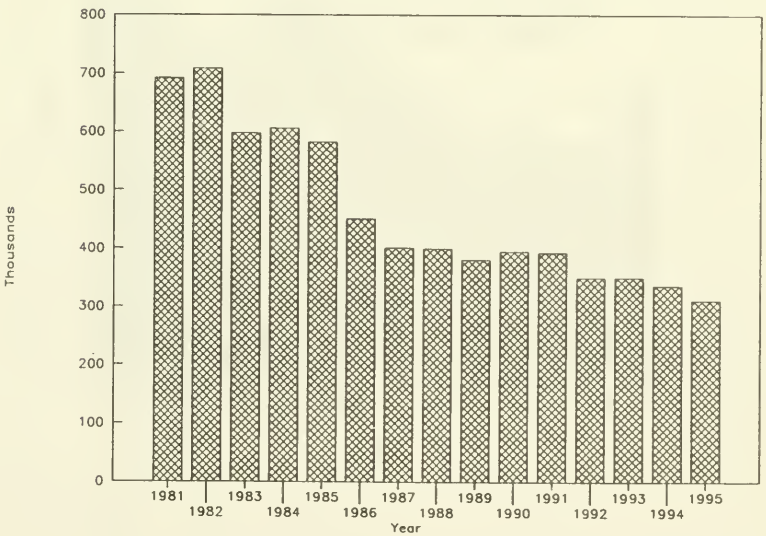
Are They Adequate to Increase Domestic Production?

- Many geologists and petroleum engineers believe that as much oil will be found and produced in the U.S. in the future as has been produced in the past.
- Recent estimates indicate that there is enough oil to sustain a sizeable domestic oil and gas industry for more than 50 years.
- Finding and costs have been significantly lowered in recent years by the development of new technologies such as three-dimensional seismic and horizontal drilling.
- Overall oil recovery rates have increased about 20 percent since the 1980's.

OIL AND GAS INDUSTRY EMPLOYMENT

- The domestic oil and gas industry has lost nearly a half million jobs since 1982.
- About 20 jobs are created in all sectors of the economy for each $1 million invested in the domestic oil and gas industry.

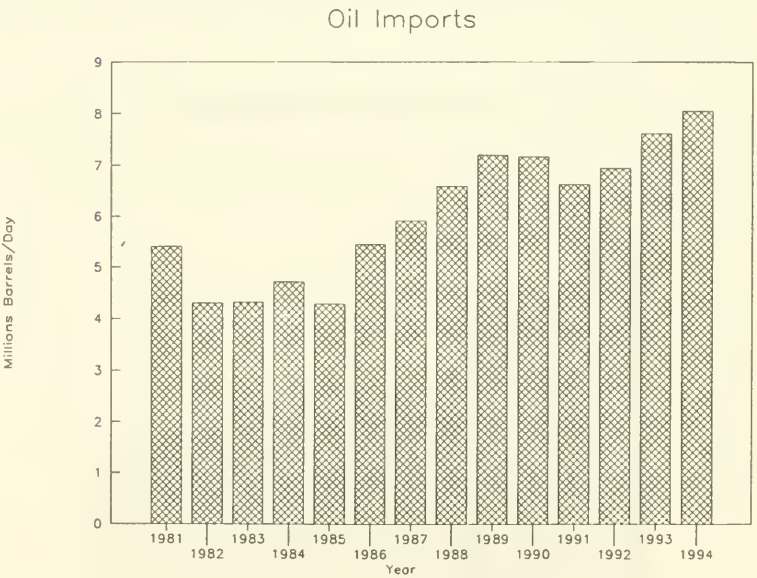
Oil and Gas Extraction Employment



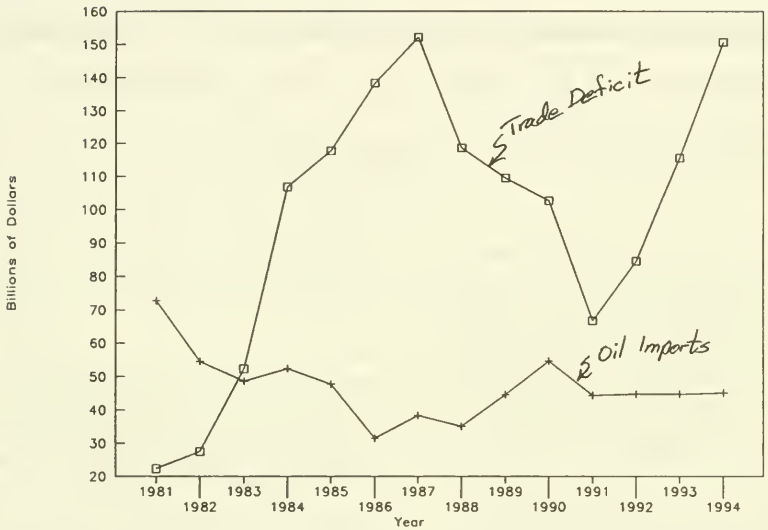
OIL IMPORTS

Lost Opportunity to Create High Quality Jobs?

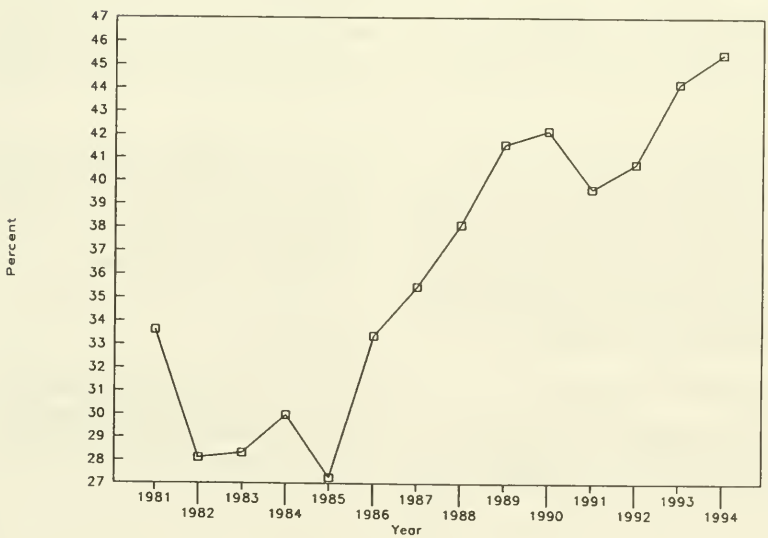
- Oil imports increased 87 percent from 1982 through 1994.
- Imports now provide about one-tenth of all natural gas and half of all oil consumed in United States.
- The U.S. now spends about $1 billion per week on imported oil.
- Every $1 billion worth of oil imports replaced by domestic production creates 10,000 jobs.
- The U.S. Department of Energy estimates that imported oil will comprise 68 percent of consumption by the year 2015.



Comparison of Value of Oil Imports and the Size of the Trade Deficit



Oil Imports as a Percent of U.S. Consumption



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Proposed Oil and Gas Regulations Will Harm U.S. Economy

If the new federal environmental regulations that have been proposed for petroleum exploration and production are implemented, there will be major costs to the nation's economy without providing significant environmental benefits. The billions of dollars in increased operating expenses for the nation's oil and gas industry will cause the loss of thousands of jobs in this and related industries. The proposed regulations' high cost will also shut in thousands of oil and gas wells, cause a decline in domestic production, increase petroleum imports, and result in the loss of billions of dollars in federal and state revenues.

Highly restrictive requirements are currently under consideration by the U.S. Environmental Protection Agency (EPA) and other government agencies. These new costly requirements under the Clean Air Act and other environmental laws will place unwarranted financial burdens on oil and gas wells and other facilities that are located in sparsely populated areas and pose minimal risk to the public.

The choice is not between environmental protection and a sound economy. Regulations can be developed that provide protection without excessive cost by using sound scientific principles, risk assessment and cost-benefit analysis.

Total Costs Could Reach $14 Billion

The nationwide cost of complying with environmental regulatory proposals now under consideration will initially amount to $9.6 billion and could reach $14.2 billion over a five year period.The individual company costs would also be high. For example, one offshore Gulf of Mexico oil field would be required to spend as much as $3.1 million to bring the field into regulatory compliance. An onshore Oklahoma oil field could have to spend as much as $378,000 for new regulatory requirements.

These high costs have significant effects:

Losses of Over 54,000 U.S. Jobs. Compliance with pending regulatory proposals could result in the loss of a total of 54,500 U.S. jobs. Some 19,300 of those lost jobs would be directly from the domestic oil and gas industry. The balance of job losses would occur in the communities where industry employees live and in the businesses that supply the U.S. petroleum industry.

Shut-in of Over 200,000 Oil and Gas Wells. The job losses will result mainly from a substantial decrease in the number of producing oil and gas wells. An estimated 171,000 oil wells and 33,000 natural gas wells would be shut-in because it would not be economically feasible for their operators to make the required expenditures to bring them into compliance with these regulations.

Decline in Oil and Gas Production. The decline in producing U.S. wells would not only affect employment, but would also result in a decrease in crude oil production of 295,000 barrels per day, a 5 percent decline. Production of natural gas would decline 6 percent.

Oil Imports Increase to 60%. By reducing U.S. petroleum production, the new environmental requirements would help push imports to 60% by the year 2000, up from 50% today. The widening gap between U.S. production and consumption must be made up through increased imports. The cost of these imports could total $8.9 billion between 1996 and 2000.

Loss of $9 Billion to Federal and State Governments. Pending environmental regulations would reduce federal and state revenues. Federal corporate income tax revenues would fall by as much as $6.8 billion, state revenues by up to $1.7 billion, and the federal government would lose nearly $500 million by the year 2000 in royalties associated with offshore oil and gas production.

Sound Choices Protect Environment and Economy

State and federal regulations should ensure that human health and the environment are adequately protected. Regulations that produce minimal environmental improvement, focus on problems that pose limited risk, or have adverse impacts on both businesses and the national economy should be reexamined.

Four important processes should be used to provide both environmental protection and a sound economy:

- Use risk assessment in selecting regulatory targets.
- Require the use of peer-reviewed scientific principles in regulatory analysis and development.
- Weigh the cost of proposed regulations with the environmental benefits.
- Use flexibility in compliance requirements to account for the diversity of operations being regulated.

It is through the use of these techniques that we can establish a rational approach to prioritizing the Nation's environmental problems and create appropriate solutions.

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